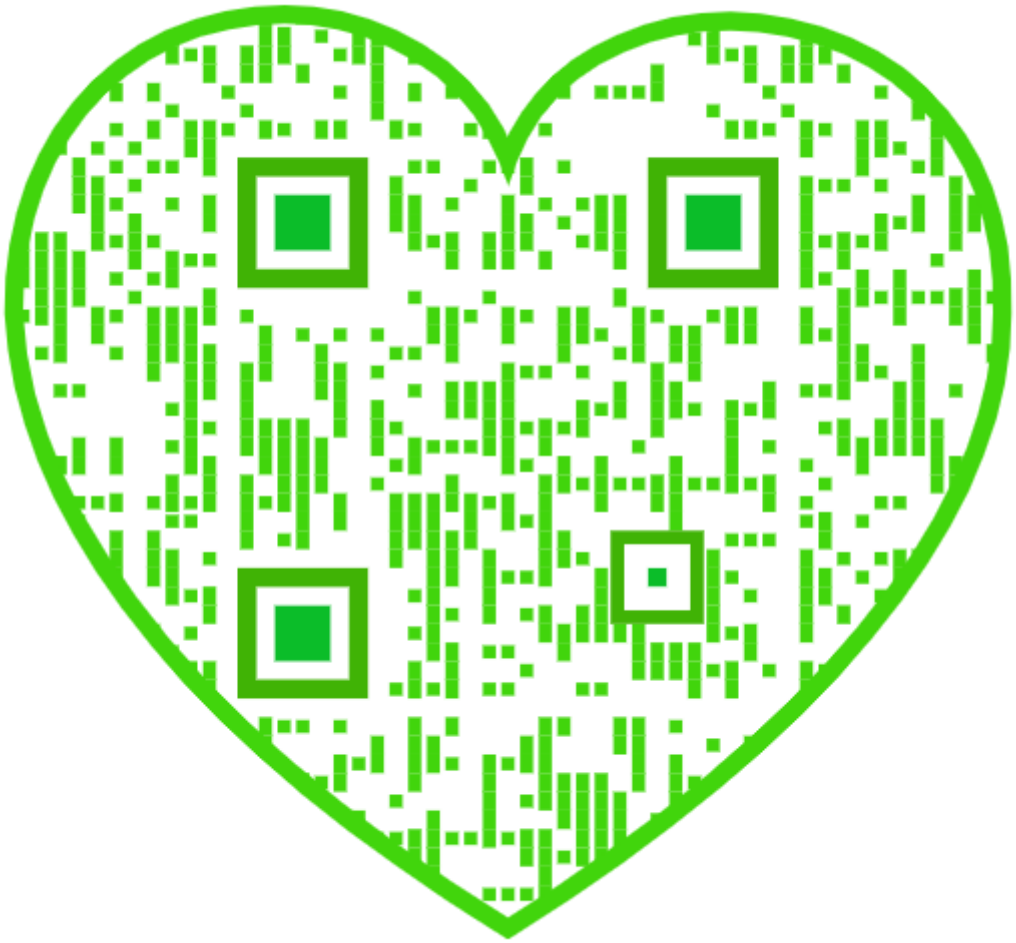

THE ARCHITECT AND ENGINEER

APRIL 1934

...This Issue...

Landscape Planning for Industrial and Institutional Projects

The Architect as Pictured by the After-Dinner Speaker

A Modern Adobe House by Hardman & Russ, Architects

Protective Coatings for Metal Work

Drastic Steps Needed to Check Spread of Termite

Problems of California School Construction Act Discussed by Engineer

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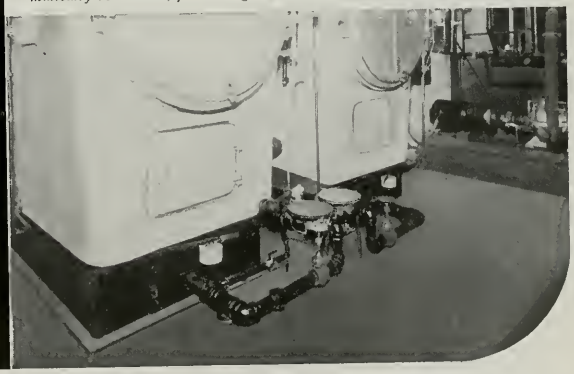

Thumb Tacks and T-Square

TODAY not more than 25 per cent of our families own their homes. Yet the stability of the American government will always be in direct proportion to the number of occupied owned homes.

For a number of years, the trend has been away from home ownership, due to developments in communication, transportation, financing, etc., that changed our perspective on living.

Those who have been responsible for this change in public thought must now, in turn, change their own attitude. Government officials and industrial and professional leaders must unite to create an incentive for people to own homes.

■ ■ ■

WHEN the building industry gets under way again then, and not until then, will the country show real signs of recuperation. Steps are being taken to persuade the government to arrange for small loans to property owners to modernize their homes, apartments, office and store buildings. This would do more to start the building industry on its way than any other movement we can think of. The loans need not be large. Advances of from $200 to $500 with ten years to pay at 4 per cent would enable the home owner to paint his house, revamp the plumbing, build a new roof and provide numerous other needed improvements that would make his property livable, rentable, salable and taxable. Think of the different channels this repair money would reach—the carpenter, the painter, the plasterer, the plumber, the electrician, the roofer and so on. Many of these men are now subjects of charity. Many of the supply houses are on the verge of bankruptcy. Think what the expenditure of this money would do for them. Every town and hamlet would feel the benefit. Factories would resume the manufacture of materials and in a very short time millions of people dependent upon building activity, would be back to work, earning and spending. As one San Francisco business man put it:

"Instead of handing men picks and shovels and getting nothing back from the money expended, the Federal Government might far better lend the owners of homes and income property low-interest money to put their houses in order. Workmen would get jobs for which they are better suited and the Government would eventually get its money back."

The Disabled Veterans of the World war and other organizations are behind the plan. More power to them!

■ ■ ■

SPLENDID work is being done by the Architects' Advisory Committee, representing Northern and Southern California architectural interests, in a co-operative move with the California State Division of Architecture, in securing an interpretation and enforcement of new laws dealing with the construction of school buildings. The committee is composed of W. G. Corlett, chairman; D. A. Reidy, W. Steilberg, C. F. B. Roeth, W. Richards, J. F. Murphy, R. C. Mitchell and M. Hunt. Meetings have been held in Sacramento, San Francisco and Los Angeles. On Feb. 2 the entire committee met with the Engineers' Advisory Committee and Messrs. McDougall, Kromer, Johnson, Bolin and Stafford of the State Division. These meetings are expected to result in revision and modification of Appendices A and B of the School Construction Code. C. H. Kromer, Chief Engineer of the Division, has asked the help of this committee in preparing what will eventually be a State School Code. Within two months a complete report will be submitted in printed form, to include design data and information as to rulings, etc., affecting school design and construction. The State Advisory Commitee has served the Association well and has represented and guarded the interests of the profession in a most creditable manner.

SPARKS OF HUMAN INTEREST

By CHESTER P. NINEKIRK

THE rotunda balcony of the City of Paris Department Store in San Francisco recently held one of the finest exhibitions of California Home Architecture that seventy-two competing architects could produce. Artistically and cleverly arranged drawings in perspective appeared real and attractive.

* * *

In one location the delicate shadings in pastels, on another wall the flaming colors of a Western sunset, made an appeal that gripped one and gloriously expressed the feelings of its creator with a new and unique perception of beauty.

* * *

So that none of the thousands of visitors might experience any difficulty in visualizing the completed plans, winning designs were beautifully reproduced in miniature models, even to the landscaping.

* * *

Standing amid this display of creative art, we could visualize in picture, the traditions and provincial styles of ages old and their beautiful adaptations to modern expression. But there was a human interest here from which our attention could not be released. It was the inner spirit, the indominable will of these men, who possess that unwavering courage to wage their battle against the almost overwhelming odds which threaten to destroy them. It is something beyond comprehension just how these men can still control their faculties for creative production at a time when the building of homes is comparatively not being done.

* * *

Nevertheless, new clouds are forming on the horizon of American business. One of the greatest industries in the United States is about to move ahead again. Slowly but surely, gathering power, it will contribute employment and new vigor to the many who receive their very life's blood from the building of American homes.

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APRIL
1934

NRA
WE DO OUR PART

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UNIVERSITY OF HAWAII, HONOLULU, T.H.

This portico of the Library Building, one of the older buildings on the campus, is well framed by the royal palms that create an exotic air of tropical luxuriance to the picture. This planting already existed when the present plan studies were made.

THE ARCHITECT AND ENGINEER

APRIL 1934
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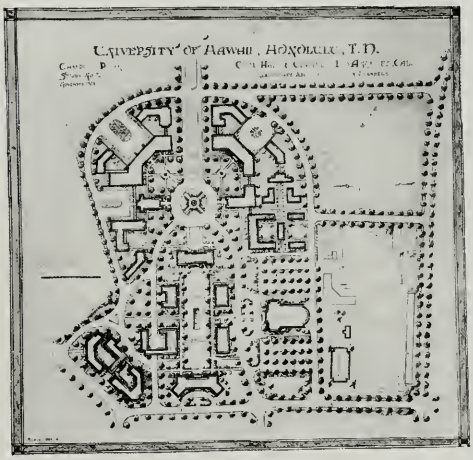
THE LANDSCAPE ARCHITECT IN INSTITUTIONAL PLANNING

by
GEO. D. HALL, Landscape Architect

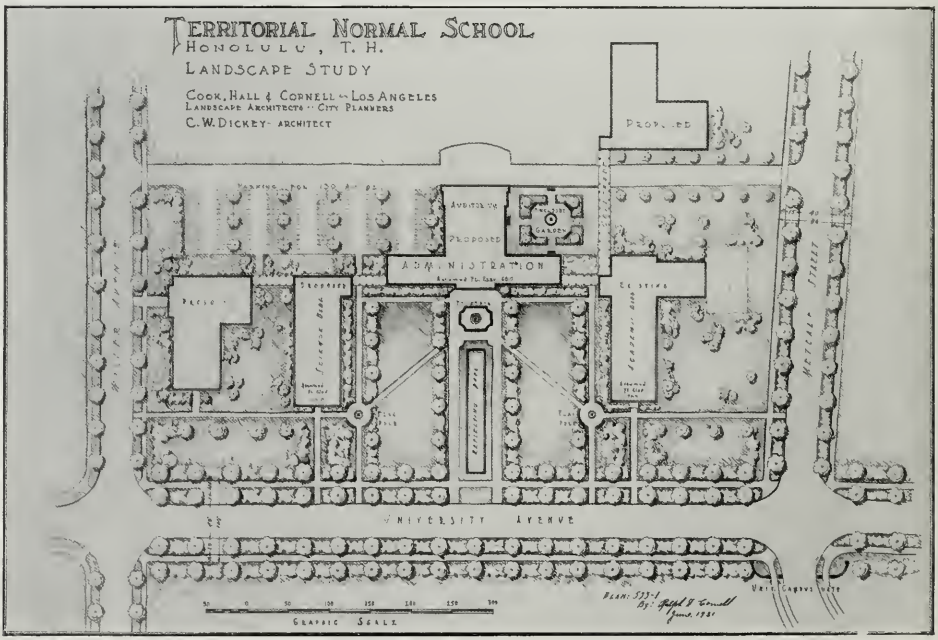
As one relief for the unemployment problems of recent years, the United States Government has made appropriations and launched a wave of national building that follows closely upon an earlier wave launched by states, counties and municipalities in the erection of many public buildings and civic undertakings. Prior to these great public expenditures there existed a pressing need for increasing facilities of plant and physical equipment in our schools throughout the country, to provide for the ever increasing number of students seeking education in public institutions. Literally, billions in public moneys have been spent on public structures throughout an era of expansion such as this nation has never before known, resulting in a vast number of new or enlarged Federal buildings, state buildings, county buildings, city halls, civic centers, universities, colleges and school groups—all built at an unprecedented rate.



UNIVERSITY OF HAWAII, HONOLULU, T.H.
This general plan of the campus was designed to serve as a guide in the building expansion of the University. Although the suggested plans for proposed buildings are purely imaginary and unlikely, in actual shape and size, their locations are very real and are to be used as a guide in future building growth.

In analyzing this expansion of public work during the past decade, it is the intention of this article to discuss the provisions for planning and construction in the programs as issued by the Treasury Department in

UNIVERSITY OF HAWAII, HONOLULU, T.H.
A gate study for the main entrance approach to the campus, prepared by the architects, Webber and Spaulding, in conjunction with Cook, Hall & Cornell. An oriental suggestion to this design has seemed fitting for a land known as the Gateway to the Pacific.



TERRITORIAL NORMAL SCHOOL, HONOLULU, T.H.
The Regents of this institution have been wise in the realization of the value of proper planning and group arrangement. Although but one building of the group was erected, at the time landscape plans were prepared, the campus has been planned in its larger aspects.

carrying out Federal projects, and by the various official authorities of states, counties or cities in carrying out public institutional developments. Any analysis of what has taken place, in the consummation of projects calling for architectural and landscape architectural skill and judgment, clearly proves that success and economic values depend upon having well co-ordinated plans and specifications jointly worked out by experienced architects and competent landscape architects, under whose supervision the plans should be carried forward.

Foresight and clear understanding of the economic worth of well co-ordinated planning has too often been conspicuous by its absence, and improvement can be expected only as public officials responsible for drawing up building programs, come to realize the truth that scientific planning and specialized knowledge are a real economy toward the proper grouping of buildings with landscape setting and in the landscape development of the site itself.

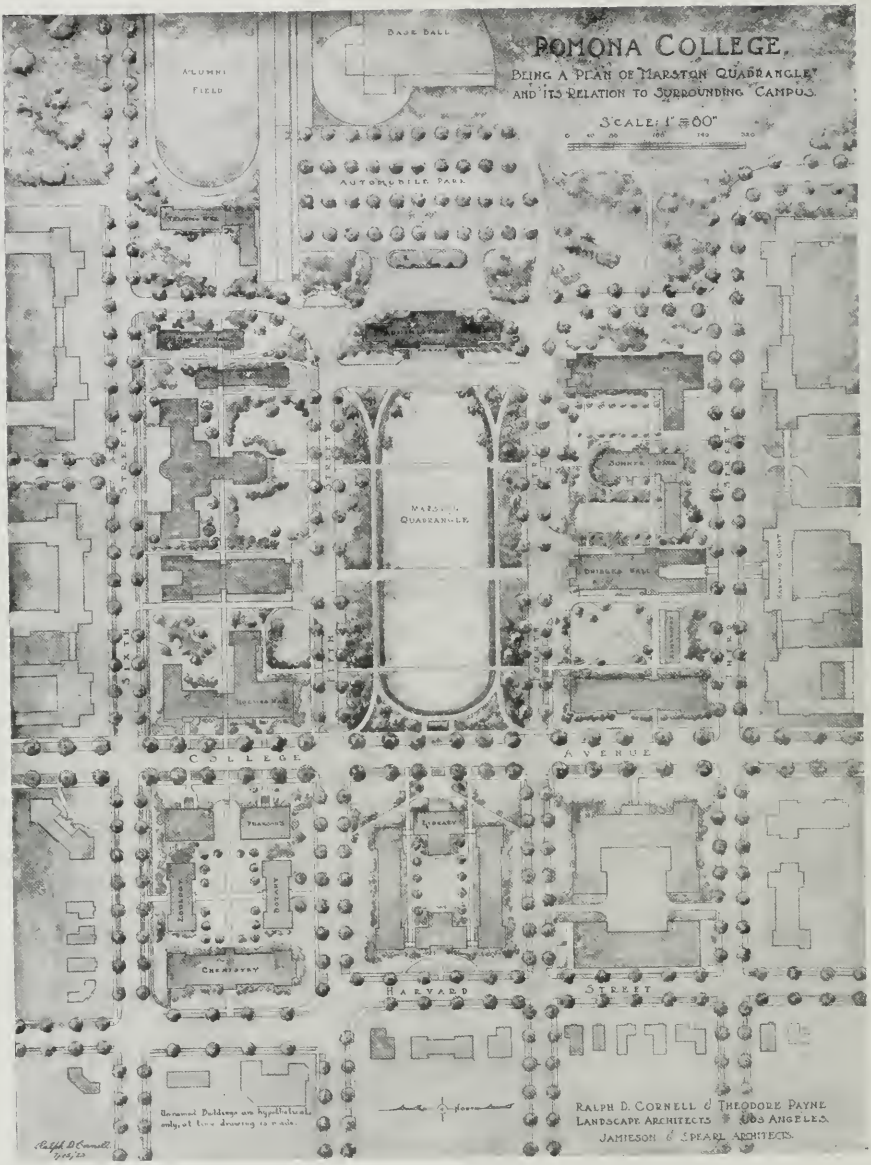
In presenting the subject it seems advisable to discuss first the school building program, although the fundamental principles of landscape design and the need for well co-ordinated plans would apply with equal force to hospital groups, civic centers or other institutions.

California, justly famed for her many fine schools, has carried out a tremendous program during the past two decades, to meet the need for expansion. That professional architects have appreciated this unusual opportunity and, when given a free hand, have designed school buildings with originality of conception, courage and good taste is apparent; and yet with all the fine buildings, erected at great expense, it must be recognized that the group arrangement and landscape settings of the buildings have often left much to be desired.

A closer inspection of individual sites frequently shows the lack of scientific planning of the site necessary properly to co-ordinate the various elements and factors in the composition, with results that are often detrimental to the best functioning of the institution. It is evident that such institutional planning, although profiting by the employment of skilled architects, has failed to reach its highest expression because of inferior landscape development of the site and of planting details.

Let us consider this situation of fine architecture so frequently combined with mediocre landscape architecture in institutional planning, in the hope that some explanation may be found. Surely the profession of landscape architecture has been more than eager to undertake government work in order that the best expression of landscape art may be recognized in the fulfillment of public building projects. If, as a profession, the landscape architects have failed to give a good account of themselves in this vast activity of public building projects, the answer can only lie in the lack of opportunity and in the failure of government officials to recognize the *need of expert advice in landscape planning as a co-ordinating factor to architectural planning.*

An examination of the original set-ups on governmental programs brings out some pertinent facts that affect the professional practice of both architects and landscape architects. First, it should be noted that official appropriations or budgets for governmental projects very seldom provide for the employment of professional landscape architects as designers or advisors in planning, even for those projects particularly requiring the specialized knowledge of the trained landscape architect. It should also be noted that comprehensive planning of sites,—to ensure good building group arrangement and a carefully studied scheme for drives, paths, planting and other fac-



POMONA COLLEGE, CLAREMONT, CALIFORNIA

This plan for the main quadrangle and grouping of buildings about the quadrangle, was prepared ten years ago and has served as a general guide in subsequent development. While changes of detail are bound to occur, such a plan serves as a base map and sense of direction in all expansion that may follow.

tors entering into the landscape composition,—is seldom if ever considered a matter of such economic importance as to warrant the expense of being well advised.

Architects of recognized ability whose remuneration is usually provided for in the official budgets, are frequently consulted as to the location of the particular building contemplated and are permitted free rein the common practice has been to call for landscape construction bids *without having designs, carefully prepared plans or specifications upon which to bid.* The result has been that each contractor specifies what he thinks should be done in as definite or as vague a way as he sees fit, and states his charge for carrying out his own plans. No two bids are comparable under such

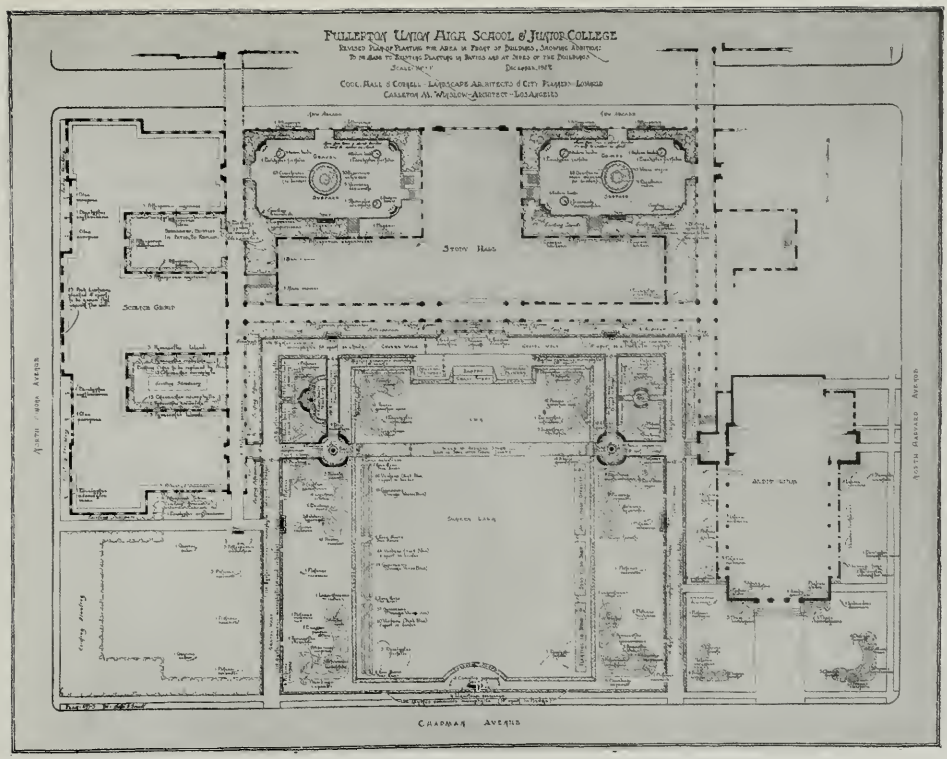
POMONA COLLEGE, CLAREMONT, CALIFORNIA

View of an enclosed garden looking toward Mt. San Antonio in the distance. This grand old mountain, framed into the picture, has been brought into many a garden and campus scene of the vicinity. Webber and Spaulding are architects for the wall fountain. Ralph D. Cornell, now of Cook, Hall & Cornell, designed the garden.

for taste and judgment within the limits placed by the finances of the program. Once the building has been designed by the architects and approved, construction details and specifications are drawn and the work carried out under rigid supervision. But not so the ground planning and landscape development. In probably more than ninety percent of school and institutional development, as well as Federal projects, conditions, since they necessarily vary with each individual conception, — and all too frequently the proposals and conceptions are those of landscape contractors with very limited experience in the art of landscape design. Meritorious designs are seldom accepted since the governmental stipulations generally provide that the lowest bidder shall be employed to do the work. Need one ask if such method of procedure

POMONA COLLEGE, CLAREMONT, CALIFORNIA

A view of Harwood Court as seen from the patio of Bridges Hall. These cypress trees were planted about fifteen years ago, by Ralph Cornell. Jamieson and Spearl are architects for the building in the center, while Myron Hunt designed Bridges Hall, wings of which show in the foreground.


FULLERTON UNION HIGH SCHOOL & JUNIOR COLLEGE
COOK, HALL & CORNELL - LANDSCAPE ARCHITECTS & CITY PLANNERS - LOWELL
CARLETON M. WINSLOW - ARCHITECT - LOS ANGELES
STONY HILL
CHAPMAN AVENUE

FULLERTON UNION HIGH SCHOOL & JUNIOR COLLEGE, FULLERTON, CALIFORNIA

This plan illustrates the method of preparing landscape planting plans. This entire plan was prepared in advance of any planting, and the landscape work extended over a period of succeeding years as funds and budgeting permitted. Thus, every walk and detail and plant and flower went into its right and proper place,—each step contributing toward the ultimate design.

is intelligent, economical or wise in the expenditure of public money, and need one seek further to find the reason why professional landscape architects in independent practice, whose professional ethics forbid any commercial profit on materials, are seldom employed on public work?

* * *

In the photographs of plans, perspectives and views of institutions, used to illustrate this article, the projects shown have generally been financed through private capital controlled by individuals or committees who have recognized the economic value of comprehensive site planning in advance of building operations. This is not true, however, of all illustrations presented. As landscape architects* we have been called upon to consult, advise and prepare designs and plans for committees in charge of contemplated projects, frequently before the selection of a building architect. Invariably our firm has urged the early selection of the architect who would be employed to design the buildings, in order that he might enter fully into all discussions of the general landscape development, in

*Cook, Hall & Cornell.

SOUTHERN CALIFORNIA EDISON STEAM PLANT,
LONG BEACH, CALIFORNIA

This organization, spending millions of dollars on its physical plant and equipment, has realized the value of beauty and landscape setting for its buildings. Situated on the beach front, with nothing but dredged-in fill for soil, many carloads of garden loam were hauled in to serve as a base for planting.

AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA, LOS ANGELES

This perspective sketch illustrates the development of a large patio recently completed in club headquarters at Los Angeles. It is truly a patio in that it is completely enclosed by buildings. It provides parking space for many automobiles and has been designed and landscaped with this use in mind. Roland Coate is the architect of the buildings.

which each building should play its distinctive part as a contributing factor in the general composition.

In those institutional developments where committees have benefitted through the fullest exchange of ideas and knowledge of the ground planning and building requirements, expressed by competent architects and landscape architects working together, success has resulted in full measure. The finest examples of public work and institutional development are the result of the inspiration and well guided judgment of committees working in conjunction with their architects and landscape architects, in the preparation of comprehensive plans for the development of the grounds. Such planning considers the location and character of buildings as well as all other factors which constitute functional parts of a well correlated plan.

It is only by a sympathetic understanding and helpful cooperation between the sister professions of architecture and landscape architecture, that the high aims, the purpose and the art of each profession may best express itself in public projects of any nature. May the future development of the United States make it possible for the two professions to work in close conjunction in the erection of magnificent building groups in beautiful landscape settings.

A HOUSE IN THE MEDITERRANEAN STYLE

THE ARCHITECT AT THE DINNER TABLE

by
REGINALD TURNOR, B. A.

THE architect is habitually good-natured but gloomy. One imagines that even his detractors, that is to say, almost the entire non-architectural population, will grant him the first of these qualities. For where else can be found a professional man willing to listen with a tolerant smile to the bantering, ignorant insults which form the conventional method of holding conversation with him? Perhaps his gloom springs from his long endurance of gibe and ridicule, from a sad despair of ever bringing round the public, his prospective client, to a more seemly attitude towards him. Many a member of this obscure but necessary profession must have been irritated, behind his smile, by the complacency with which the "ordinary man or woman" will attack him in public. He cannot, in public, hit back with any show of force; he must not lose his sense of humor. Perhaps he is too disillusioned even to want to argue.

In what used to be known as polite society, a harmless, non-aggressive person may mention in the course of conversation that he is an architect. What happens? The "ordinary man" at once prepares for attack. Sometimes, it is true, the attacker contents himself with airing his views, usually as wrong-headed as they are thoughtless, on the æsthetic side of the question. We are all hardened to hearing the Shakespear Theater referred to as a jam factory, and Grosvenor House as a prison. We expect our lay opponents to advocate the building of bastard half-timber cottages, and pompous sham-classic banks and offices. This they are entitled to do, if they must. We ourselves should be chary of condemning the work of other professions, our ignorance of which might seem a suitable reason for silence; but we let that pass. If the ordinary man does not like the looks of a building, he is at liberty to say so, and the architect is at liberty to disagree with him. But does the ordinary man stop at this? He does not. As likely as not, he will not worry over such trivialities as æsthetics and taste, but will unblushingly refer in terms of some disapproval to the incompetence, nay, more, to the morals of the architect.

There is nothing unusual in being told by the ordinary man that he employed an architect who swindled him. This is said half jestingly, half indignantly: This architect deliberately spent far more money belonging to his client than he had any right to do. In fact, he is a thief and an embezzler. More, he charged a higher percentage on the cost of the work than he was entitled to. He should be in prison by rights, but the client was lenient, and generously dismissed him, without taking legal proceedings. So much for the morals of the architect.

Another time, the topic will be the time-honored joke about the architect who forgot the staircase. Now all architects are used to this one, and regard it with tolerant good humor. They have even acquired a certain affection for it through constant association. Some of them keep a record of how often they have heard it.

EDITOR'S NOTE—This article was first published in *Architectural Design and Construction*, London, England, and later in *The Octagon*, official organ of the American Institute of Architects.

They are almost as accustomed to the well-known fact that architects, being for the most part of the male sex, are incapable of designing kitchens and cupboards. They laugh politely. Their doors and windows never fit, and more often than not the architect will place the larder between the boiler and the W.C. Architects are, in fact, not only swindlers and thieves, they are also fools. They do not know their job. If the ordinary man, who has no training and has never thought about architecture, were planning a house, he would do it far better.

Architects are, then, not only knaves and fools, their very existence is unnecessary.

Now all this, to the profession itself is, of course, stale news. They are resigned to it, and pursue their gloomy ways hoping to be allowed to earn enough to keep body and soul together, but never expecting anything but abuse from the outside world. Does it ever occur to them that this attitude of the public is bad for the profession? We all know that the public's views on architecture are in its worst interests, but do we realize clearly enough what is its attitude towards architects as men?

Imagine the same situation reproduced with a member of another profession as the butt. The scene is a dinner party anywhere.

A guest has just stated that he is a surgeon.

Another guest says:

"The surgeon who operated on me deliberately took pieces out of me that might well have stayed in. It increased his fees, you see."

He smiles, for he is entertaining the whole party, and goes on:

"Not only that, but although it was supposed to be an operation for appendicitis, my appendix was the one thing he forgot to take out."

Everyone smiles. Here the surgeon was both fool and knave. Another guest takes up the cudgels.

"I remember the row I had with a doctor. He charged me twice as much as he'd agreed to for attending my little girl. Besides, she got much worse after the treatment. That's the trouble with you doctors. You don't understand a woman's psychology. You ought all to have women partners." And so on, and so forth.

Now I want to make it quite clear that in each of these cases, that of the architect and the doctor, all these accusations may be perfectly true. The only difference is that these remarks, often, more often than not, actually *are* made to the architect and nobody thinks anything of them, while in the case of the surgeon, I imagine, anyone who made them would be considered to be a trifle lacking in tact, downright rude one might almost say, and the dinner party might become something of a frost. Let us rub it in a little farther. What would be thought of a man who said to a lawyer in public:

"Oh, so you're a lawyer. All the lawyers I've ever known have been blackguards and incompetents."

A little odd, perhaps, just a trifle too outspoken? I think he would be guilty of unsocial behavior.

As I said, architects are mostly good-natured men. They do not stand upon their dignity, nor demand a lip service of respect where such is insincere. But they are surely entitled to be taken on their merits, and given a chance to earn the accusation of dishonesty and inefficiency. I cannot feel that architecture will improve while its exponents are assumed to be men of such low caliber. Many of them are fools, I fear, and some perhaps, are knaves, but no one likes to be told to his face that he is probably either or both of these things, *on no evidence at all.*

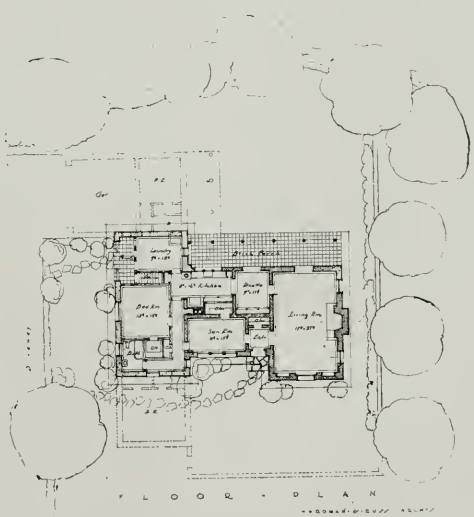
A MODERN ADOBE HOUSE

by
B. REEDE HARDMAN, Architect

Because of the exacting conditions required for their proper construction, such as suitable soil and Mexican labor, the number of adobe houses built in California is comparatively small. Recently good soil for this type of construction has been found in Contra Costa County and the result is that a group of these homes are being erected there. The one here illustrated is near Lafayette and while it is still in the unfinished stage, it presents some interesting features for publication. The owner is supervising the work which is being done by local labor.

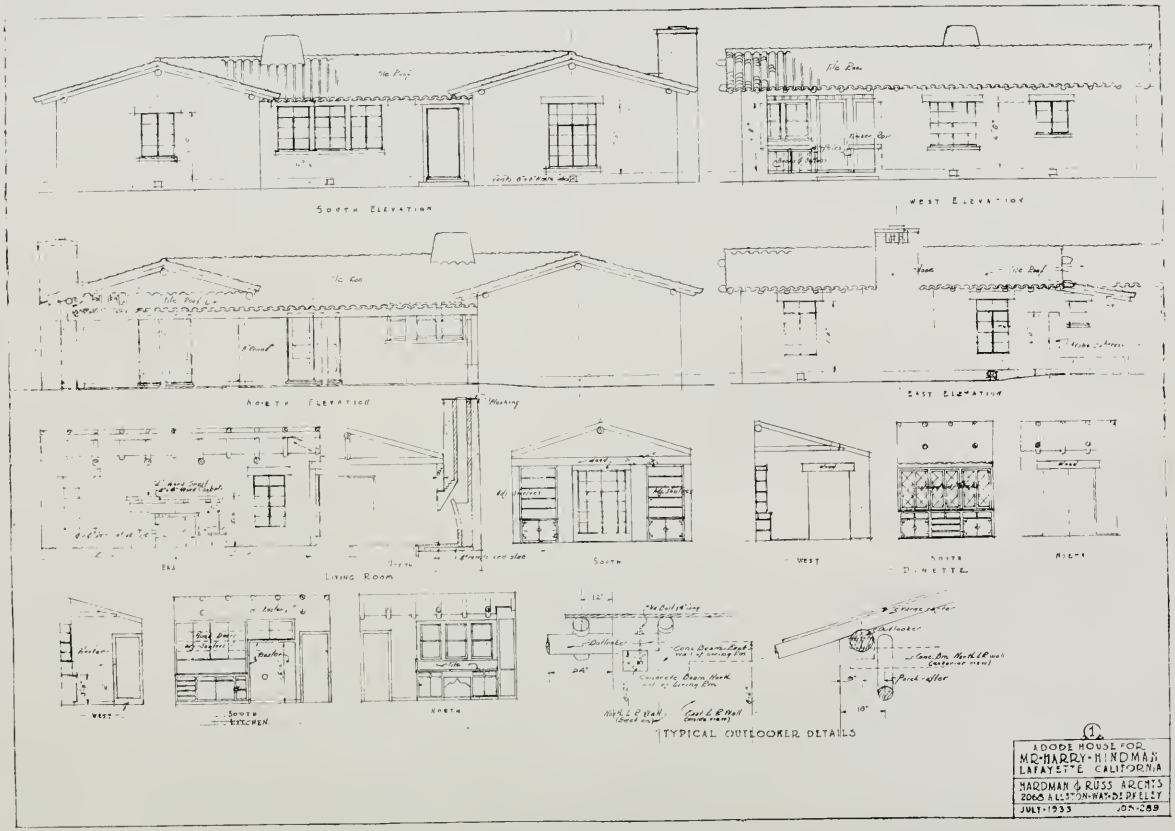
THE approach to the house leads through a beautiful orchard to a setting beneath an immense walnut tree. The house is a low rambling type, with wide, overhanging eaves and deep reveals shielding its interiors from the summer heat of the San Ramon Valley. Ample provision for outdoor life has been made by opening the living portions of the house onto a spacious covered porch facing a walled garden. The latter extends to the wooded banks of a creek where, on a wide shady terrace by the water's edge, are an open barbacue fireplace, picnic tables, rustic benches and swings.

Our client wanted a home of rural charm, cool in summer, warm in winter and moderate in cost. At the beginning of this discussion it may be well to review the preliminary events leading to the selection of adobe for a building material. Wood frame with plaster, board and batten and brick and hollow tile, were eliminated after a thorough investigation of the possibilities of adobe construction. It was found that the sub-soil underlying the site was admirably suited to the making of adobe and that both coarse and fine gravel could be obtained from the creek bed along the rear of the property. Furthermore, workmen skilled in the making and use of adobe, were available in the neighborhood.



PLAN, ADOBE HOUSE FOR HARRY HINDMAN, LAFAYETTE, CALIFORNIA
Hardman & Russ, Architects

The history of adobe reveals that some of these buildings have been occupied for several centuries. They are noted for their coolness in the hot climates of Mexico and the border state because of their thick earthern walls. Since the major portion of our building materials



WORKING DRAWINGS, ADOBE HOUSE FOR HARRY HINDMAN, LAFAYETTE

HARDMAN AND RUSS, ARCHITECTS

were available on the site and the climate being ideal, this type of construction seemed most logical.

Adobe walls are of two general types. The first is known as an earth rammed construction, being built by pouring the stiff mud into wooden forms, ramming it into place, much in the same manner as a concrete wall is built. In the second type the walls are built up of individually moulded brick, laid in a mortar of adobe mud. The inches above the adjacent ground lines and applying a bituminous water - proof membrane between the concrete and the adobe. This has the additional advantage of binding the structure into a rigid unit at its base.

Exterior walls that are not buttressed at least every ten feet by adobe walls intersecting at right angles, are made eighteen inches thick. Shorter span walls so buttressed are twelve inches thick. Interior walls are eight and twelve inches in thick-

ADOBE HOUSE FOR HARRY HINDMAN, LAFAYETTE, CALIFORNIA
Hardmann & Russ, Architects

latter was selected for this job because of its attractiveness of wall surface and its greater flexibility in use.

Modern engineering has taught us the observance of certain structural safeguards against earth shock and other types of failure that were not practiced by our adobe forefathers. One notable type of failure has been the disintegration of the bottom of the walls, due to the splashing up of rain water and to the capillary attraction of moisture from the ground. This has been safeguarded by laying concrete footings approximately fifty percent wider than the wall to be supported, carrying the concrete twelve ness, depending upon their length and height. A reinforced concrete collar beam is placed in the top of each wall at the eave line, thoroughly bonded to the wall and to the roof members, binding the top of the building again into a single unit. In this manner lateral forces, such as may result from an earthquake, are transferred to the cross walls. The house was planned in the form of an H so that each unit acts as a right angle brace to the other. The height of the adobe walls, from foundation to collar beam, ranges from seven to seven and one half feet. These heights are held to a minimum as the walls, when subjected to

lateral forces, react as a beam between the foundation and the collar beam.

Since the roof construction forms the ceiling in the major portion of the house, the rafters are of logs, five to seven inches in diameter. They are supported at the ridge by an eight inch log extending through each gable end wall. Each rafter

PROGRESS PICTURE, ADOBE HOUSE FOR HARRY HINDMAN.
Hardman & Russ, Architects

and the log cross ties are bolted to the concrete collar beam, transferring lateral roof forces to the cross walls.

The procedure followed in making the bricks is quite primitive, although in some instances the adobe mud is churned in a concrete mixer. It was believed, due to the soil composition, the machine mix would have to be made too wet, resulting in the cracking of the bricks as they dried. The lines of the building are staked out and the exact location of the basement is determined. After the top soil has been removed, the area is spaded to a depth of about six inches. The Mexican workmen, having cut off their jeans to more nearly resemble shorts, soak the area with water and with their bare feet and hoes knead the soil to a plastic state. Over this is spread a layer of straw and manure and then a layer of gravel, the quantities being dependent upon the composition of the soil. This is again churned in the same manner until the ingredients are thoroughly mixed to the proper consistency. It is then wheeled to a plot of ground that has been levelled off, where the bricks are moulded. This process is repeated until the required number of bricks are made. By preliminary calculation the basement has been made of sufficient size to supply soil for all the bricks.

The forms for moulding the bricks are

made of one by four inch strips of wood, slightly bevelled to facilitate removal after being filled. Bricks are made in two general sizes, eight by eighteen inches and twelve by eighteen inches by four inches thick. The form is laid flat on the ground and the adobe mud packed into it, raking the top out to a slightly concave surface.

made for vertical shrinkage, due to the contraction of the mortar in drying. Ingenious details were worked out to allow for this settling by moulding special grooved and rebated jamb bricks and by providing a slot in the solid wood lintels.

The use of steel sash marked the advent of the first modern equipment in the job.

ADOBE HOUSE FOR HARRY HINDMAN, LAFAYETTE, CALIFORNIA
Hardman & Russ, Architects

The form is then lifted off and the operation repeated, leaving the bricks in long rows to bake in the sun. After they have dried sufficiently to handle, they are stood on end and the loose soil that has adhered to the bottom side is scraped off. When they have properly cured, they are piled in long rows ready for use.

The adobe walls are laid up in the same manner as the ordinary brick wall, except adobe mortar is used. In setting the frames for doors and windows, provision must be

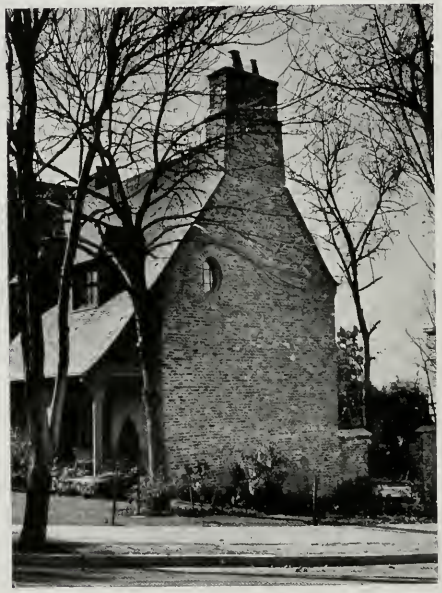
It is a departure from precedent, but to be a slave to tradition would mean sacrifice in sanitation, convenience and much of the comfort of living. Steel sash were selected primarily because in an average size opening, say ten square feet, they provided about twenty percent more clear glass area than wood sash and secondly, the simplicity of framing and installation made their use more economical both in size of openings and cost. The adobe walls above the doors and windows are carried by solid,

rough sawn wooden beams, eight inches deep.

The roof has quite a flat pitch and is insulated with a layer of one half inch fiber board over the pine sheathing. Although tile was originally planned, its surface will be covered with creosote stained, hand split cedar shakes, twenty-five inches long and one inch thick at the butts. This is a much lighter weight roof and consequently more earthquake resisting. Both the exterior and interior of the adobe walls, after having been pointed up and rubbed down with burlap and sand, are finished with a white-wash, decorated with wainscots and architraves painted in blue, terra cotta and yellow. All wood trim and exposed structural members are given an antique stain finish.

The interior is equipped with modern plumbing conveniences, oak plank floors, linoleum, oil burning warm air heating system and electric range, water heater and refrigerator.

The total cost of the house will compare quite favorably with its estimated cost in wood frame and plaster, namely 22c per cubic foot.



A BRICK WALL WITH GOOD ARCHITECTURAL LINES
Edwin L. Snyder, Architect

PROTECTIVE COATINGS FOR METAL WORK

by
E. A. HURST

MUCH has been said in reference to protective coatings for metal. Recently a paper was read at a meeting of the Electrochemical Society in Chicago. This paper was givven wide publicity in technical magazines throughout the United States. It refers specifically to tests made over a period of years in England, the results of which fall under four headings—

1. Nature of the metal;
2. Presence of separating materials between metal and paint, such as mill-scale, rust, water or salt;
3. Character of paint as determined by the nature and quantity of the pigment, the oil, the thinner and the dryer;
4. Character of the atmosphere, water or soil to which the painted metal is exposed.

The metal prime coat seems to evolve around red lead, red oxide, linseed oil and turpentine with a proportionate amount of dryer.

This combination has been in use and apparently an accepted fact for a period of over fifty years but during all this time statistics compiled by the Department of Commerce inform us that the annual wastage due to rust and corrosion reaches the stupendous figure of over three hundred million dollars a year.

This enormous destruction resulting from rust and corrosion is steadily increasing in proportion to the amount of steel and concrete used in building.

Paint technicians who have carefully studied this tremendous problem agree that the various types of steel and iron, ranging from superior copper steel and electrolytic iron to a steel containing a high percentage of carbon and manganese, in their turn have different reactions on prime coating.

The reactions as to moisture, humidity, acids, gases and salt spray have also been carefully noted.

During the last few years chemists have in their investigations made exhaustive tests to find the reason why the proverbial red lead has fallen short of the mark as a rust preventative. Experiments along these and other lines are well worth citing.

In Test Number One several pieces of steel were used cut from angles, shapes and plates. The metal was thoroughly wire-brushed and in some instances sand-blasted. A good coating of red lead and linseed oil with turpentine was then applied, and the metal was exposed to the elements on the roof of a building in the heart of an industrial area and near salt water.

After a period of two years, it was found that the linseed oil had completely decomposed, leaving a film of red lead and lead

soaps containing a high percentage of moisture. The moisture in the red lead acted as an electrolyte, wherein electrolysis of the exposed molecules took place, causing rust and corrosion.

It was further found that the lead soaps emulsified and became soluble in water and washed off, leaving the surface of the metal exposed to the atmosphere.

Test Number Two used the combination of red lead and iron oxide (Indian) with linseed oil. This combination proved to be superior both chemically and mechanically to straight red lead with linseed oil.

Microphotographs revealed that the small particles of red oxide in combination with the red lead materially helped to seal the open pores left in the linseed oil.

An examination two years later demonstrated that moisture had penetrated to the metal and corrosion was taking place, but considerably less than with the straight red lead.

In Test Number Three a number of pieces of metal were coated with red oxide used with a non-porous vehicle. The surface of this metal had previously been allowed to oxidize and had a thin film of rust.

A suitable type of thinner was used to carry the vehicle and to penetrate into the film of rust.

This combination of red oxide, the non-porous vehicle and the thinner on oxidization formed an insulation around the particles of rust, which were bonded to the metal, thereby excluding any further attack of oxygen, and eliminating any possibility of rust or corrosion.

Consequently, when an examination was made of this test two years later the coating was found to be in perfect condition with no breaks or traces of moisture, in spite of the outside exposure to extreme heat and cold and the rays of the sun.

The results of this last test proved so satisfactory that several thousand gallons of this combination were manufactured and sold both in the industrial and marine fields. This further proved the practicability of the coating inasmuch as it was subjected to abrasion and general hard working conditions.

Chromates and linseed oil were combined in Test Number Four. The results this time were much the same as in the case of red lead and linseed oil, except that the former seemed to have slightly more lasting qualities.

Test Number Five dealt with metallic zinc dust 99% pure, and linseed oil. This combination when applied to metal gave an unsatisfactory result, due to the porosity of the linseed oil vehicle.

Test Number Six was made with a combination of metallic zinc dust and vegetable gums, on pieces of clean steel and iron. The result of this test was highly satisfactory.

It was noted that the vehicle formed a non-porous film and that the metallic zinc dust became homogeneous with the metal.

This combination was tried on several ocean-going vessels where the exposed metal had been wire-brushed and apparently all previous paint coatings had been removed.

However, after a period of approximately six months the coating began to peel off in places and on microscopic examination small particles of old paint were found to be in the pit holes, thereby, preventing adhesion between the metallic zinc coating and the metal to which it was applied.

Test Number Seven was performed with metallic zinc paint.

Sandblasted steel test panels were given one or two coats—brush applied. No trouble or difficulty was found in the brushing qualities and the coverage was very good.

A high power mercury quartz lamp was used in this test, and it was noted that

chalking and crazing were absent. The test was not carried to completion owing to lamp trouble, but the zinc paint showed up superior to red lead.

A salt spray test was also applied, a 20% sodium chloride solution being employed. Test pieces were kept in cycles consisting of 8 hours spray and then 16 hours saturated damp salt atmosphere. Under this treatment the samples stood up over 350 hours of spray plus 1050 hours of dampness, the difference in ratio due to weekend periods, without any indication of failure. There was no indication of rust creeping under the coat from the unprotected edges. Blisters, cracks, checking, crazing and chalking were entirely absent. On the other hand, red lead coats have failed in 24 hours of spray, and 200 hours is a good life for a top coat.

A test piece was subjected to weathering cycles, a cycle here consisting of

16 hours—damp dark atmosphere at 100 degrees Fahrenheit
1 hour —ice water
7 hours—salt spray (20% sol.)
16 hours—cool damp dark atmosphere
1 hour —dry ultra violet light
7 hours—moist ultra violet light.

Under this treatment, the piece in question stood up for 25 cycles, there being no indication of failure, with the exception of a slight uniform lightening of color.

In the abrasion test, which was also applied, the Gardner Emery abrasion apparatus was used and the life of the zinc coating was far superior to anything previously tested.

These exhaustive tests were continued for some time in order to prove further the efficacy of the metallic zinc paint in question.

After the sample had been in salt spray 900 hours and in damp salt atmosphere about 2700 hours, an examination under the microscope showed that the center of the panel was in very good condition. There was a tendency of the rust to creep OVER the paint at the edge of the panel. With the exception of a few spots at which the top coat of paint had shrunk away from the bottom coat, the panel was in good condition.

After the test-piece had undergone 56 weathering cycles in all the condition of the sample was as follows:

The central portion of the panel showed a few cracks but did not exhibit any rust coming from these cracks. The edges were considerably discolored due to the rust creeping OVER the paint, but when the rust was scraped away, a fair coating of paint was still seen protecting the metal. This sample was deeply scratched in the early part of the test, to allow the coating to disintegrate and the rust to creep under the coating if possible. An examination of this scratch showed it to be filled up with a rather high ridge of rust. The coating did not disintegrate around the scratch.

A portion of the panel was subjected to the light and water test. It was placed under water so that the ultra-violet light would play upon it. This test was continued for 180 hours and the coating stood up very well under this severe treatment. It cracked but slightly and only exhibited blisters due to the second coat separating in spots from the first coat.

There is no doubt, as a result of thorough tests of this kind, that combinations of technical coatings can be manufactured and applied that will eliminate rust and corrosion for a period at least twice as long as that of red lead, even though red lead has in the past been used as a prime coating for all types of metal.

It is obvious that the paint manufacturer is not in a position to dictate to the steel manufacturer as to the component parts of the steel. Protective coatings therefore became a paint manufacturer's problem, in

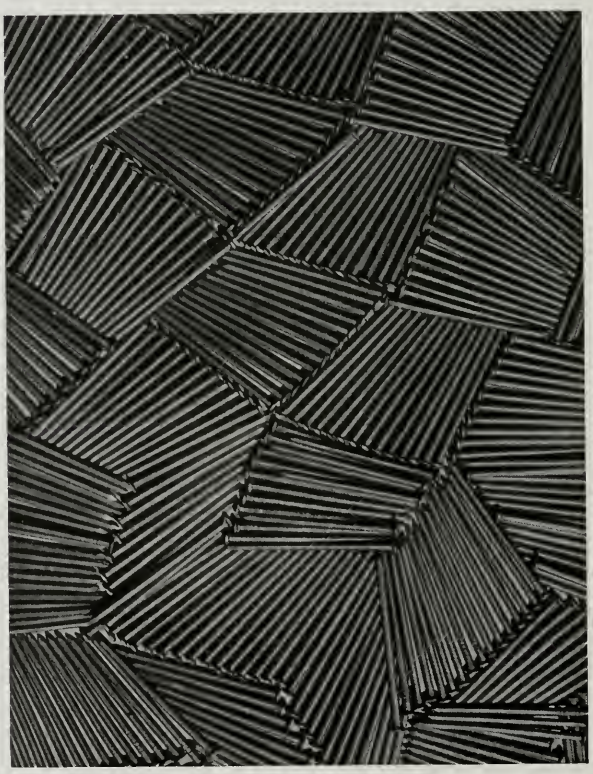
the way that the lubricating problem was solved by the oil refiners and not necessarily by the automotive engineers.

Much has already been accomplished, however, for technical coatings can be built to suit any purpose from a food-compressing plant to a steel bridge. This includes prime coatings such as are used in the automotive industry.

Tests have demonstrated that the time to prime coat steel is soon after oxidation takes place and loose mill scale has been removed. This should be done at the point where steel is manufactured, or as soon as it arrives on the ground for erection. This is especially necessary in the case of box girders or in parts of steel structures that are inaccessible after fabrication.

Many instances have come to light where poor prime coats have caused and accelerated rust and corrosion. It is therefore essential to apply a prime coat that is of the finest quality and that is the proper one for the specific purpose to which the metal will be put.

Improper undercoatings are the most expensive.



"NAILS"
A Photograph by P. Douglas Anderson in *Camera Craft*

TERMITES AND TERMITE CONTROL

by
A. A. BROWN, Consulting Engineer

EDITOR'S NOTE:—*This is the final of three articles prepared for readers of* THE ARCHITECT AND ENGINEER *by Mr. Brown who is chairman of the Termite Investigations Committee, San Francisco. These articles have highlighted portions of the Committee's final report, "Termites and Termite Control", from the University of California Press, Berkeley, California; Charles A. Kofoid, Editor-in-Chief.*

Such widespread interest has followed the publication of Mr. Brown's articles that the publishers have decided to make the subject of "Termites and Termite Control" a regular feature of this magazine. Many letters of inquiry or questions not fully covered in Mr. Brown's three published articles have been received. These inquiries will be answered by Mr. Brown in succeeding issues. Readers who are confronted with problems arising from termite conditions are asked to outline their troubles in queries to this magazine and answers will be published in detail by Mr. Brown.

THERE is no "typical example" of termite damage to a building. After analyzing 1,000 cases of subterranean termite attack, Dr. A. L. Pickens, biologist for the Termite Investigations Committee, says in part: "No stumps are found under the houses in a city commendably careful of the understructure of its dwelling houses, but they may be exceedingly common under flimsily built residences thrown up by the fly-by-night type of speculatve builder who builds with the idea of selling out within a short time. (Fig. 21).

"It is noted that much more trouble is experienced with concrete foundations than with either brick or stone. These figures are capable of misinterpretation unless one bears in mind that the number of brick and stone foundations is very small compared to that of concrete. However, it is well to remember that brick and stone are usually bound with a good grade of mortar, every inch of which is troweled under the mason's eye as it is put in place, and the wall is leveled off and permitted to dry before the mudsill is placed. Cement, on the other hand, is often dumped in by the barrowful and not tamped sufficiently to bind the pebbles and cement, so that huge cavities are left, large enough to serve as termite roadways, and even as broad chambers, without the termite having to excavate them; furthermore, the mudsill is often placed in a faulty manner. Some carpenters, before the top layer of cement is dry, hasten to drive huge spikes into what is to serve as the lower side of the mudsill. after which the timber is dropped onto the top of the foundation with the spikes plunging into the wet cement. When the whole has dried and the forms are removed, the mudsill is often found embedded in a water-holding trough formed by the splashing up of the cement for a short distance at the lower side of the mudsill, which dries in that shape. The close bond between timber and concrete tends to keep the timber damp, thus inviting attack by both termites and fungi.

BUILD RUNWAYS OVER CONCRETE

"Upon analyzing the causes of trouble with concrete, we find that most of it arises from foundations level with the ground, or only slightly above. Termites, however, even in northern California, may build run-

ways over high concrete foundations, and in several instances have been known to build over walls nine, twelve, and even fourteen feet in height (Fig. 22). It is probable that such cases, if anaylzed after openings for water and steam pipes. Cracking of concrete foundations accounts for other infestations.

"The custom of permitting upright studs and columns to rest in cups in concrete

Fig. 21—Tree stump left under an apartment building. The stump is infested with subterranean termites. The firewood piled in contact with the ground and stump may also provide an avenue of attack.

extensive excavation, would be found to result from an abundant supply of form boards left in the soil beneath, wherein the termites have multiplied sufficiently to permit such extensive runway building. Wood floors laid over concrete are susceptible to attack either through cracks or through floors, or to project entirely through a later addition of a concrete floor, and to come in contact with the ground beneath, is highly dangerous, especially if a good portion of the house above rests on such a stud or column. Under the first condition any moisture placed on the floor in washing

or otherwise tends to collect in the cup and disintegrate the lower end of the column either by decay or by termites finding entrance through cracks that form as a result of localized weight. If the timber rests on the ground beneath, we have a camouflaged ground contact, and termites, by means of constant activity and wide-ranging exploring parties, easily reach such by traveling under the concrete. Rat-proofing, laid down properly and in a smooth sheet, is a good termite preventive, especially so since it presupposes the cleaning up of all stumps and debris under the house; but when placed in lazily over and around wooden columns and in some cases, to avoid a minimum excavation, even spread over mudsills and unremoved forms that are in contact with the ground, it becomes a liability.

Fig. 22—Covered passageways composed of particles of earth and fragments of chewed wood, constructed by subterranean termites on vertical concrete walls for two stories in a heated warehouse in the San Francisco Bay region.

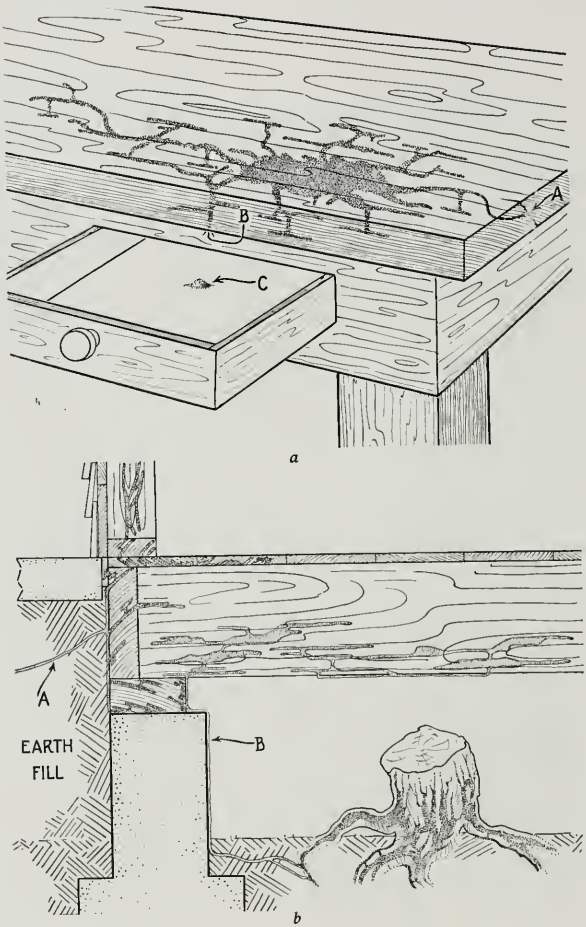


Fig. 23—a—Composite sketch showing schematically the workings of a powder-post termite (cryptotermes brevis) in a table top. A—The assumed point of entry of the colonizing pair. C—A pile of tiny fecal pellets, indicative of the presence of these termites, thrown out at aperture B. b—Sketch showing typical locations of galleries and workings of the western subterranean termite. A—Gallery in ground leading from main colony to unprotected woodwork in building. B—Covered runway from another colony located in a stump left under the house. This runway is built over concrete foundation to woodwork above, a less common condition.

"It is a rash lawyer who attempts to find a loophole through the law of necessity. However, there is a curious quirk in the psychology of builders and home-owners that constantly seeks to interpret 'ground contact' in the manner of a legal quibbler. steps, stoops, porches, etc., matters much; hence the long list of infestations from wooden steps too close to the ground, stucco and wood walls against which earth has been banked, earth-filled terraces, and ground-contacting porches, and lean-tos on

Fig. 24—Portion of the surface of a shingle-covered dwelling in Berkeley, California, after partial removal of shingles to show the surface attack on shingle-covered members and combined termite and fungus attack below. The shingles extended over the foundation to the ground.

In the minds of these people only a horizontal ground contact matters (Fig. 23) and a vertical surface of earth or soil against a wooden wall never counts as dangerous, while others seem to feel that so long as the actual foundations are sufficiently high no end of ground-touching the upper side of otherwise well built homes, and even partly buried in the ground or thrust against excavated banks sloping up the hill from the house.

Beware of Shingled Sidewalls

"Another curious oversight that frequently occurs is the nailing on of shingled

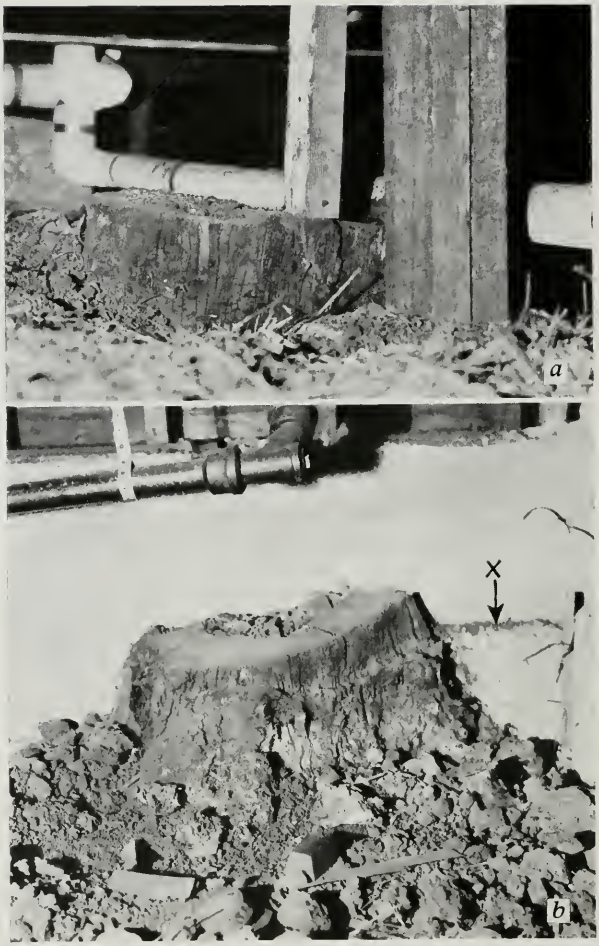


Fig. 25—Some causes of termite attack. a—Tree stump left under an apartment building. Examination revealed heavy infestation of stump by subterranean termites. A 4-inch by 4-inch post on the stump is a floor support. This provided the termites with a direct path to the joists. Intermediate post beside the stump rests on a concrete pier which has been covered with soil. Steam pipe helped to provide ideal conditions for infestation. b—Foundation wall built over tree stump. Part of stump also appears on outside of structure. Subterranean termites infested the stump. X indicates termite tubes from stump toward sill. As a means of getting rid of these infestations, holes should be bored in the stump and frequently filled with a preservative such as Reilly penetrating creosote until the stump is well saturated.

Fig. 26 — Work of ground dwelling termites in a building in Fresno, California. a—Joists. b—In flooring and subflooring. The joists were almost on the ground and placed in a masonry wall without proper ventilation.

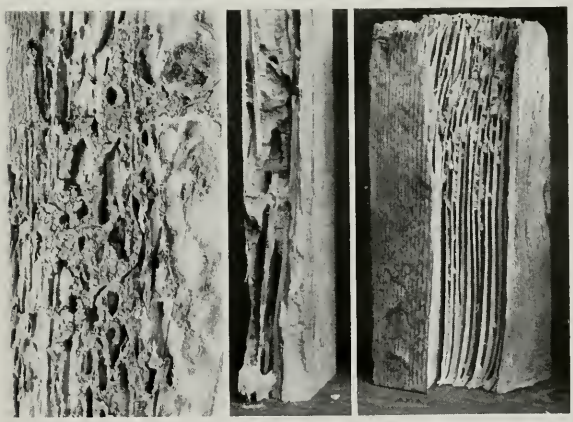


Fig. 27. — Workings of the ground dwelling termites. All show the earthy frass characteristic of the subterranean termites. The tendency to select the soft portion of the annual rings is shown in b in coarse grained wood, and in c in close grained wood. In both cases the work was wholly internal, without external evidences of its existence except at the ends of the members. Pieces a and c were sound wood without visible evidence of fungus attack.

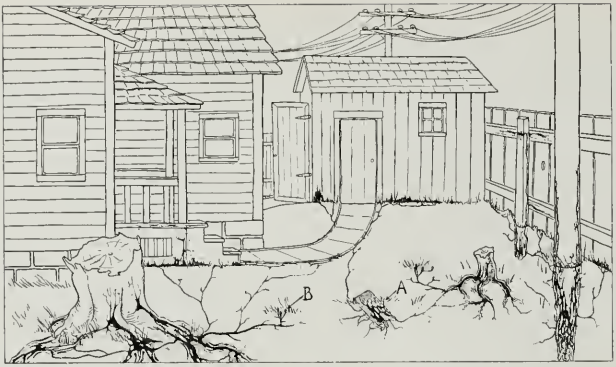


Fig. 28—This sketch combines the sorts of conditions found to prevail in many localities where wood has been improperly used. Unprotected wood in or on the ground makes possible both settlement and rapid increase of the subterranean termites. Workings in stumps, poles, posts, sidewalks, and wood of buildings are shown in black, as are the galleries within the earth. A marks the supposed original point of entry of one of the colonizing pairs, and B the points of emergence of swarming alates at the proper season.

Fig. 29—Covered runways from nest in ground over concrete pile to bridge and rail timbers above. b—Earthen runways on poles. c—Flagpole in school yard set in copper-lined concrete base, which fell as result of damage by ground dwelling termites. Flag poles should be butt treated with a creosote material which protects against termites and fungi but in no way interferes with the color painting of the pole. On December 11th, 1933, a similar flag pole crashed onto the street in Presidio Terrace, San Francisco, during a wind storm. Untreated poles placed in the ground are a constant menace to life and property.

side walls in such a way that the lower tier is in contact with the ground, thus offsetting the benefits (from a termite-damage-prevention standpoint) of the concrete foundation that may have been properly placed (Fig. 24). The small cracks between shingles placed on the outside walls afford splendid runways at a minimum of labor on the part of the insects, and alates have been known to swarm in the second story of a building so constructed.

"Stumps left under the house, particularly after being cut green and immediately shaded, furnish a good breeding place for termites from which they can build or otherwise secure entrance into the house over the stump (Fig. 25). Such a condition usually indicated a cheap and careless type of excavation. Not only should stumps be removed before building, but the soil should be excavated on a level until the foundation stands free and clear not less than 12 to 18 inches above the highest point in the soil beneath the floor (Fig. 26). The contractor who leaves stumps under a dwelling often leaves blocks, chips, and other debris under the floor after the building is finished, and these are a fruitful source for breeding a colony large enough to do considerable damage to the house."

One practical way of reducing or eliminating the infestation of wooden structures by termites is to be found in proper methods of construction and repair of buildings. The specifications presented below aim to eliminate and protect against the establishment of reservoirs of termite food in the soil or under buildings, and to protect structural materials of wood from the invasion of termites from the soil and, as far as possible, from the settlement of new colonies at swarming time. These specifications were prepared by the Executive Committee after carefully reviewing all available data and reports of the Committee's investigators.

Specifications for Prevention

(a) All stumps and roots in the ground to be occupied by the building shall be removed.

(b) All foundation walls and piers shall be of concrete or masonry laid in Portland cement mortar, and shall extend at all points at least six (6) inches above the finished grade. Masonry or concrete foundation walls shall extend at least as high as the top of any adjacent concrete or masonry slab which is supported by either natural ground or an earth fill. All foundation walls shall be reinforced with not less than two (2) steel rods, three eighths (3/8) inch in diameter, placed not more than four (4) inches below the top of the wall. Such reinforcing shall be continuous throughout the length of every wall and around all corners. The length of the lap in every splice shall be not less than forty (40) times the diameter of the rod.

(c) A termite barrier, as described in section (e), shall be installed in the building, and all wood between such barrier and the ground shall be No. 1 Common or a better grade of lumber which is impregnated by pressure treatment with a final retention of not less than eight (8) pounds of No. 1 grade of coal-tar creosote per cubic foot of wood, the grade of creosote and the method of treatment being in accordance with specifications of the American Wood-Preservers' Association; or such wood shall be No. 1 Common or a better grade of lumber which is impregnated by a pressure-treatment with such other equivalent preservative and equivalent method as may hereafter be approved. Such wood shall be completely framed before treatment whenever this is possible, and when it is not possible, the surfaces exposed by cutting after treatment shall be thoroughly coated with at least two coats of hot coal-tar creosote or other equivalent preservative.

(d) Openings through foundation walls or exterior walls shall be provided for cross ventilation of the space below

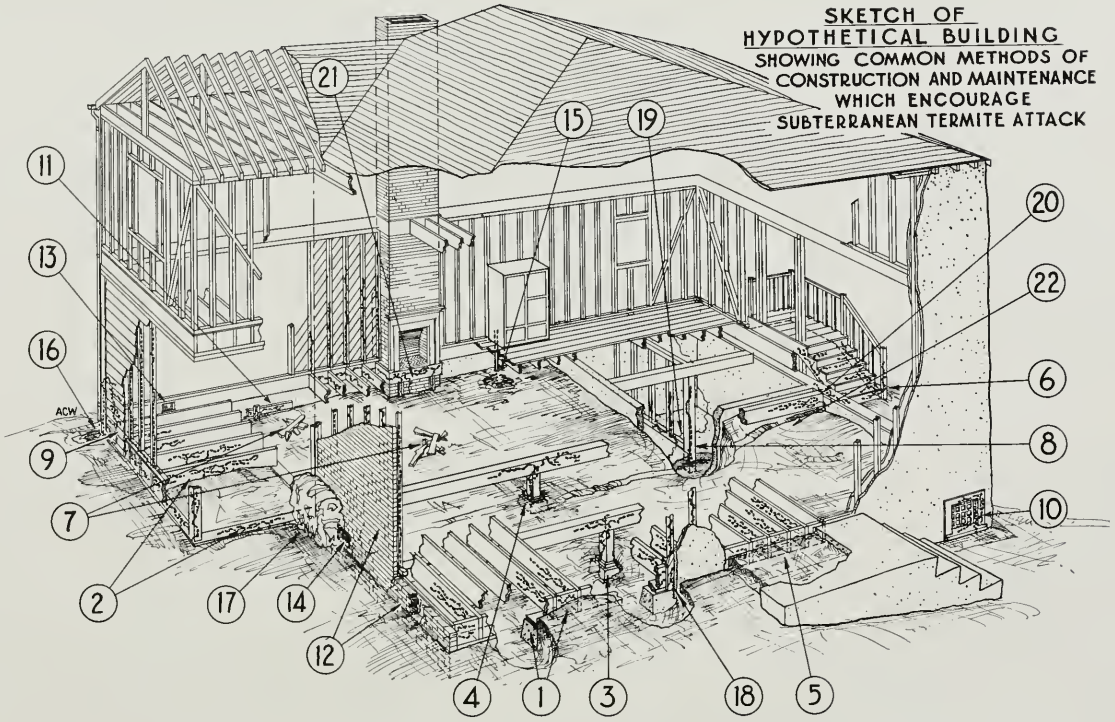


Fig. 30—Types of construction inviting attack by termites: (1) Foundation wall too low—wood frame in contact with ground. (2) Wood mud-sill and wood joists in contact with ground. (3) Soil has been thrown against one side of pier and is in contact with wood. (4) Top of pier is below surface of ground. (5) Wood framing members in contact with earth fill under concrete porch. (6) Exterior wood porch and steps in contact with ground. (7) Waste and casual wood in contact with ground attract termites. (8) Post extending through concrete floor to ground below. (9) Exterior wood siding in contact with ground. (10) Wood frame around vent is in contact with ground. (11) Concrete form boards left in contact with ground. (12) Brick foundation wall and veneer laid up in lime mortar which permit entry of termites through joints. (13) Vent too small for area to be ventilated. (14) Ventilation interrupted by shrubbery in front of vent opening. (15) Water accumulating under house from refrigerator drain. (16) Water from roof drains should be led away from building.

the first floor in every building in which the first floor is of wood frame construction. There shall be one opening at least two (2) square feet in net area within five (5) feet of every corner of the exterior walls of the building, and there shall be two (2) square feet of opening for each twenty-five (25) lineal feet, or major fraction thereof, of exterior wall, provided, however, that such openings need not be placed in the front wall of the building. Where it is impossible to obtain such ventilation, all floors lacking subfloor ventilation and their supporting structures shall be constructed of concrete, masonry, or wood pressure-treated as specified in section (c).

(e) The termite barrier specified in section (c) shall be so constructed as to completely cut off all access of termites from the ground to all untreated wood above said barrier. The barrier shall be made of material impenetrable by termites, such as reinforced concrete, non-corrosible metal, metal lath and plaster, or tongue and groove or shiplap wood pressure-treated as specified in section (c). All wood between this barrier and the ground shall be pressure-treated as specified in section (c).

Floor joists shall have a clearance of not less than eighteen (18) inches between the joists and the surface of the ground underneath. The ground underneath floor joists shall be leveled or smoothed off so as to maintain a reasonably even surface under the entire area covered by the floor joists.

(f) Wood laid on concrete which is in contact with the earth, such as sleepers, joists, subflooring, and attendant construction, shall be impregnated with an approved preservative, as specified in section (c).

(g) The ends of wood members entering masonry or concrete shall not be sealed in, but shall be provided with recesses or with metal wall boxes affording an air space at the end of the piece of not less than one (1) inch at each side of the member, or all surfaces of the member within one (1) foot of the end shall be painted with at least two (2) coats of hot coal-tar creosote or other approved preservative, unless the members as a whole are impregnated with coal-tar creosote or other approved preservative as specified in paragraph (c).

(h) All wood forms which have been used in placing concrete, if within the ground or less than eighteen (18) inches above the ground, shall be removed by the contractor. No waste wood shall be buried by the contractor in any fill or otherwise.

(i) Before completion of the building, all loose and casual wood shall be removed by the contractor from direct contact with the ground.

(j) For ground treatment under and around dwellings the following chemicals may be used: saturated aqueous solution of copper sulfate or of sodium fluosilicate; or a 10 per cent aqueous solution of borax; or a full-strength crude liquid orthodichloro-benzene; or crystalline paradichlorbenzene.

(k) In case a building material containing arsenic or other poison is used in a building, such material shall carry a permanent label on every square yard of material, stating: "Poisoned with arsenic (or other substance)." In case the soil under or around a dwelling has been treated with arsenic or other poison, a permanent sign shall be installed, saying: "Poisoned with arsenic (or other poison)".

These specifications, if properly carried out, are regarded as being adequate to protect buildings from damage by termites coming from the soil.

The Los Angeles Termite Ordinance

The recent "termite ordinance" adopted by the Los Angeles City Council contains, among others, the following provisions: "Mudsills, caps, pier blocks, posts, cross-bridging girders, and first floor joists, and,

for the purpose of this section, all lumber used in the underpinning up to but not including the sub-floor shall be treated with pure coal-tar creosote, or with such other equivalent preservative as may be approved by the Board of Building and Safety Commissioners." This Los Angeles ordinance is a step in the right direction but still permits the use of untreated siding at or near the ground line and failed to provide a termite barrier by not requiring the subfloor to be tongue and groove or shiplap pressure-treated lumber, thus making it possible for termites to construct covered runways and reach the unprotected lumber above.

As additional cities revise their building ordinances, as was done at Los Angeles, requiring the use of treated lumber at or near the ground in new buildings, thus shutting off further additions to the present available food supply, existing structures, many of which have thus far escaped damage, will be attacked. As the woods most favored by termites as a source of food supply become unavailable, they will seek the less palatable woods and invade structures hitherto considered immune to attack. As was pointed out earlier, the less palatable woods such as cedar, cypress, and redwood are destroyed by termites when the more desirable woods are not available.

The additional cost of using pressure treated wood is nominal indeed when the inconveniences and cost of later repairs is considered. When the termite control ordinance was being considered by the Los Angeles City Council, it was shown that the use of pressure-treated lumber for foundation timbers and underpinning would not add more than $75.00 to the cost of an average 5-room home. During the period from September 1, 1929, to August 15, 1931, there were 4,201 repair jobs due to damage by termites and related organisms reported to the Los Angeles County Agricultural Commissioner at an average cost of $103.38 per job, aggregating $434,302.-82. In another county in southern California 440 cases of repairs to buildings were reported to the Committee by a termite control operator as being occasioned by subterranean termite damage, dry-wood termite damage, and wood decay, costing on an average $269.38 per job. These amounts do not include sums spent on rehabilitation of structures, such as replastering walls, painting, or other items not directly due to damage by termites.

An interesting opportunity was offered to appraise the damage done by subterranean termites when some fifty contiguous dwellings were torn down at Berkeley to provide space for the erection of a new gymnasium and athletic field at the University of California. Four adjacent city blocks were cleared of buildings varying in age from ten to sixty years. Of the fifty buildings inspected forty-five were damaged by termites. Estimates of the cost of repairing the damaged structures ranged from five dollars on a recent building to two thousand on an older one in the same block.

Improved Construction Methods Urged

The conditions created by the rapid increase in the extent of damage caused by these insects can only be met by improved construction methods. In recent years the wood-preserving industry has made marked progress in the refinement of coal-tar creosote. The Reilly Laboratories, Indianapolis, specialists in coal-tar refining have made available a blended creosote oil of remarkably penetrating qualities that does not discolor wood when treated. There is now available a creosote oil for every wood preservation need.

[Please turn to page 48]

Engineering and Building Construction

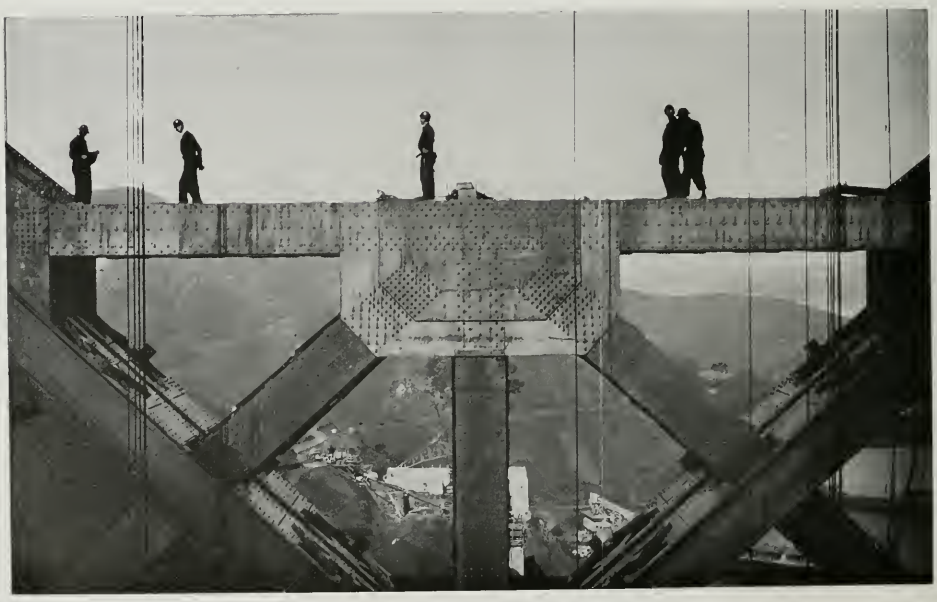
PORTALS OF THE FUTURE, MARIN TOWER, GOLDEN GATE BRIDGE

PROGRESS WORK ON GOLDEN GATE BRIDGE

LESS than 4000 tons of structural steel remain to be erected on the Marin tower of the Golden Gate Bridge to bring it to its final elevation of 746 feet.

Up to April 1 over 18,600 tons of steel had been erected in the Marin tower, which now has the distinction of being the loftiest structure in the west, having attained an elevation of nearly 700 feet.

With the tower elevation steadily mounting 20 gangs of riveters are at work on the structure, driving from 3600 to 5000 rivets a day.



WORKMEN ON MARIN TOWER, GOLDEN GATE BRIDGE, REMIND ONE OF WORLD WAR BUDDIES WEARING FRENCH HELMETS

As the height of the tower has increased a problem has arisen in the protection of the riveters from lead poisoning due to the fumes generated when the white-hot rivets have come in contact with the protective coat of red lead paint placed on the tower in the eastern fabricating plants.. As the result riveters engaged on the job are now required, not only to wear the steel helmets prescribed by safety regulations to protect them against falling material, but must wear gas masks similar to those used in the trenches during the world war, to guard them against the deadly lead fumes.

Electric Welding

As the tower erection has proceeded the task of electrically welding the lower members to the base plates, resting on the surface of the concrete pier, has been proceeding. This welding job was completed on the inside of the tower members during the month just past and the work of welding the outside started.

Meanwhile, the Pacific Bridge company, pier contractor, has been concentrating on the work on the south pier, 1100 feet off old Fort Winfield Scott, on the San Francisco side of the Golden Gate. The guide tower, which will be utilized in lowering the first fender section into place, has been completed as well as the steel truss spans connecting the tower with the end of the trestle.

Three shifts of workers on the derrick barge Ajax are engaged in final excavation operations for the south pier and fender.

Pouring "Tremie" Concrete

During the latter part of March the concrete base around the legs of the guide

GOLDEN GATE BRIDGE AS VISUALIZED BY BANCAMERICA ARTIST

tower at the end of the reconstructed access trestle was poured. The base form of the first fender section was lowered into position and "tremie" concrete poured into it.

The "tremie" concrete is concrete of the usual mix poured by the so-called "tremie" method which is used in under water work, involving the use of a tube to convey the concrete mixture to the under water forms.

In all, five forms will be required to bring the first fender section to the elevation of the trestle, following which subsequent forms will be sunk into position using the completed first form in the place of the guide tower.

With this work going on the final blasting and excavation at the northeast quarter of the fender area is under way and will be completed as rapidly as possible.

The caisson for the south pier is being completed at the Moore Shipyards on Oakland estuary. It now draws 28 feet of water and the caisson cofferdam is being built higher and pneumatic facilities are being installed.

Shafts of Pylon S1

The two immense concrete shafts of Pylon S1, fronting Fort Winfield Scott, have now reached the elevation of the connecting arch which will tie them together under the 200-foot roadway level and reinforcing steel and wooden forms are being placed in preparation for pouring the concrete in this stage of the pylon construction.

Steel for the San Francisco tower totaling 3,847 tons has been fabricated to date and 26.4 per cent of the total required cable wire has been drawn, inspected and accepted. More than 300 tons of cable wire have been completed. Cable bands and strand shoes also are in process of manufacture at the Trenton, New Jersey plant of the contractors.

Pylon N-1 on the Marin side of the Golden Gate, has been concreted to an elevation of 187 feet above sea level and work on this structure has been discontinued, not to be resumed until the main cables have been completed.

Viaduct on Schedule

Work on the high viaduct of the Presidio approach road, consisting of excavating and concreting the footings for the west approach, has been progressing according to schedule with results that are now becoming increasingly apparent to motorists and other visitors in the Presidio reservation.

The average number of men employed on the bridge proper in March was 375.

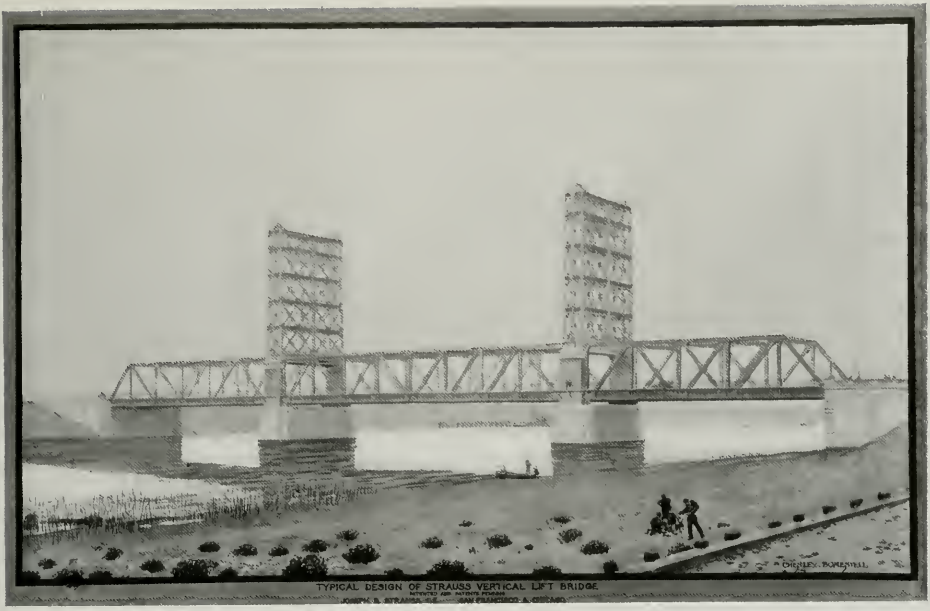
TERMITES AND TERMITE CONTROL

[Concluded from Page 44]

There is no possibility of eradicating termites. They have existed for millions of years and will continue to exist despite anything man can do about it, Professor Charles A. Kofoid says. But their major damage can be controlled. He adds: "Wood is the material best suited for homes in an earthquake country. It is economical to use. It is esthetically enjoyable. We love the feel of it and to live with it. We enjoy its patterns and colors. It lends itself to the hand of the craftsman and to the human needs of change. It can be safely used in the face of the termite menace. In a well-built city controlled by a proper building code, termite danger will be reduced, the spread of infestation will be checked, home investments conserved, and the earthquake hazard reduced."

ARCHITECT MOVES

A. R. Williams, architect, has moved to Room 408, 251 Post Street in the Mercedes Building, San Francisco. Mr. Williams formerly occupied offices with Henry C. Smith in the Humboldt Bank Building.



DESIGN FOR VERTICAL LIFT BRIDGE
Joseph B. Strauss, Engineer

AN ORNAMENTAL DESIGN FOR VERTICAL LIFT BRIDGE

by
FREDERICK W. JONES

JUST recently a design of vertical lift bridge has been brought out which represents a very distinct step toward overcoming the drawback to the lifting type of bridge from the standpoint of architectural appearance. This bridge, pictured here for the first time in any publication, is a product of Joseph B. Strauss, President and Chief Engineer of the Strauss Engineering Corporation, and Chief Engineer of the Golden Gate Bridge.

The new design of lift bridge differs radically from other designs in that the lift

span is provided with out-riggers which straddle the tower on either side and extend to a point midway (longitudinally) of the tower, where they connect to the counterweight cables in the customary manner. The counterweight sheaves at the top of the tower are located close to the tower sides and at right angles to the axis of the bridge, the cables passing over the sheaves and connecting with the counterweight near its two ends.

The tower itself is a rectangular structure, relatively narrow or slender, and completely encloses the counterweight. This permits architectural treatment which cannot be otherwise obtained and also contributes to structural efficiency. The architectural treatment embraces open lattice work above the top chord of the truss of the lifting span and a panel section at the foot of the tower. The operator's house is integral with the panel section, permitting an unobstructed view for the operator and at the same time harmonizing with the architectural treatment. This construction removes the operating house from the center of the lift span where it has hitherto been placed and where it adds to the load and produces an unsightly hump.

The construction lends itself to very effective lighting of the structure, particularly to the flood lighting of the upper portion of the towers. The flood lights are placed at the top of the panel section where they are readily accessible for attention.

This design is evidence that it is possible to treat even extreme designs such as a vertical lift bridge with as much architectural thought as a building, and it is gratifying to note that engineers are recognizing this fact. Present day tendencies are to beautify our highways by eliminating billboards and other eye-sores. In most instances there is no longer any excuse for such unsightly objects along our thoroughfares, be they for commercial or for practical needs. Bridges are no exception. The new lift bridge design points the way to the elimination of another of the unsightly bridge types to which we have been accustomed.

Photo by Ansel Adams in Camera Craft

NEW BIG TREES LODGE, MARIPOSA GROVE, YOSEMITE NAT'L. PARK
Eldridge T. Spencer, Architect

DESIGN OF EARTHQUAKE RESISTIVE CONSTRUCTION

by
C. H. KROMER, C. E.

THE science of design with reference to adequately and economically providing for seismic forces induced into any given structure or building by the accelerations produced by earthquake shock or violent slippage of the earth's crust along fault lines, is a comparatively new science and there is entire lack of precedent in the solution and interpretation of the many problems confronting the structural engineer in his effort to work out designs that are feasible and practicable and at the same time reasonable in cost. These problems are especially difficult to solve satisfactorily when consideration is given to the strengthening or reconstruction of certain types of existing buildings, constructed essentially of rigid friable material which, although comparatively unyielding and inflexible in itself, possesses the inherent quality that when subjected to severe earthquake shock it is quite likely to be so deficient in strength that it will fail.

While it must be admitted that this hazardous condition is due in very large part to the indifferent and incompetent workmanship that has in the past entered into the construction of our building structures, nevertheless it is a condition that must be acknowledged and faced and the necessary work done to give reasonable assurance that the building in question will be made safe.

EDITOR'S NOTE—A talk before the Structural Engineers Association of Northern California at the Engineer's Club, San Francisco, March 15, 1934.

LAYMAN SHOULD BE TOLERANT

The ingenuity of both the structural engineer and the architect is being taxed to the utmost to provide designs for this reconstruction work that are reasonable, economical and feasible and too much criticism should not come to those engaged in such designs if their system for providing for lateral forces should need considerable revision or if the same speed is not made in the preparation of plans as has formerly prevailed. The very fact that the work is more involved and tedious should be given tolerant consideration. Likewise a similar tolerant consideration should be given the California Division of Architecture if approval of work is not expedited with such speed as the ordinary laymen expects of the architect and the engineer. Knowledge has had to be acquired and men trained. As all of us obtain more experince in this work, our designs will become more economical and be more efficiently prepared.

The State quite fortunately had a small group who have for a number of years been taking account of seismic forces in the design of the State's buildings. These were augmented upon passage of the Safety of

School Construction Act by a number of especially well qualified structural engineers from private practice. This group served as a nucleus around which our organization has been built and which serves not only to check such plans as may be submitted, but to give such advice and assistance upon submission of the preliminary scheme of design, as lies within our province. A great mass of data has been accumulated and it is unfortunate that due to lack of both personnel and finances this data cannot be assembled and made readily available to the profession.

Reason for Past Failures

Upon first thought, the preparation of designs for lateral force resistive construction seems relatively simple, but upon more mature consideration it is discovered that quite a different view point must be assumed from that formerly taken. No longer can the interaction of one material with reference to another in the same structure be ignored even though not immediately adjacent. It is discovered upon analysis that we have in the past made assumptions that resulted in construction that was less safe than we had thought. Even for purely vertical loads there has been sufficient restraint to induce flexural stresses and strains into vertical supports but where lateral forces of considerable intensity are given consideration, we are at once forced to the conclusion that the interaction of the horizontal and vertical framed members and of such diaphragms as are present, whether trussed or solid, is all important.

A large portion of the minor failures that have occurred in the past for existing construction is undoubtedly due to lack of consideration of this condition. We have, therefore, a new science of structural design in which analysis is primarily based upon a comparison of the deflections and of the rigidities of the various materials entering into the construction of any given structure.

Considerable thought has been given and a great deal of discussion has taken place in the technical publications both in this country and in Europe, with reference to simplification in methods of rigid frame-design, resulting not only in increasing our knowledge with reference to this subject but in evolving simpler and bolder designs than had formerly been attempted.

The ideal construction is that in which all elements deflect equally, with the deflection so limited as not to unduly alarm the occupants of the building and be within the safe limits of the element considered. The best that we can hope to attain is to so limit the relative deflections of the various elements in any given structure that no undue hazard is created. Where masonry buildings are strengthened by means of frame construction, the deflection of the frame, as well as of the masonry, must be so limited that it will be less than that which would produce failure in the masonry with hazard to the occupants. If there is any doubt as to whether failure in the masonry will reach the point where it may possibly fall out and jeopardize life, it should be positively kept in place by providing a continuous membrane covering such as gunite — adequately anchored at supports and designed to serve the purpose for which it was intended.

A Light Flexible Design

In one case at least, an attempt is being made to break away from precedent and to design a school building which will be so light and flexible that it will offer a minimum of resistance and in which all rigid elements are either omitted or isolated. Plans are in course of preparation and when approved will be followed by others of similar design.

The scheme as outlined by the architect contemplates a steel frame resting on con-

crete footings which will in itself resist lateral earthquake or wind loads without the assistance of any other materials which may be applied thereto. It is the intention that all other materials attached to this steel frame will be flexible and in no way interfere with or resist the calculated deflection of the steel.

All resistance to lateral loads is provided for by two lines of corridor columns, this being true for lateral loads applied parallel to either axis of the building. The exterior columns are designed to support only such gravity loads as are tributary to them. Floor and roof beams framing into these exterior columns is to be of such design that only a negligible amount of moment is resisted thereby. The resistance to overturning is to be entirely cared for by the interior columns and column footings. The second floor and roof construction is to have a steel deck which is welded to the trusses forming the floor construction. This deck is figured as a diaphragm to transmit lateral loads in a direction at right angles to the axis of the corridors, consequently it will be necessary that the details be carefully worked out, especially along the lines of the perimeter of the diaphragm, and that connections between individual units be such as will give positive assurance of diaphragm action.

Main Points Summarized

Some of the principal points involved are as follows:—

1. The use of "Robertson" or "Truscon" steel deck floor.
2. A one inch thickness of "Thermax" is used to provide the required one hour fire resistance required for corridors.
3. The construction of the exterior walls in the use of ply-metal, consisting of sheet copper cemented to 1" Thermax. This construction is not in conformity with the requirements of the Uniform Building Code, Pacific Coast Building Officials Conference with reference to fire resistance for Type 3 buildings but nevertheless merits consideration. The Type 3 building exterior walls have a fire rating of four hours whereas the 1" thickness of Thermax would probably not rate longer than one hour. On the other hand the large relative amount of exterior area devoted to window glass should be taken into consideration.

Lateral loads at 90 degrees thereto or parallel to the corridor are resisted by diaphragms which are inserted in the floor construction as shown by the typical roof and second floor framing plan and which, acting as cantilevers, will transmit loads to the center corridor columns.

Deflections as calculated by the architect are as follows:—

First story	parallel with the corridor	.32 in.
Second "	" " " "	.11 in.
First "	at right angles to "	.45 in.
Second "	" " " "	.23 in.

Column foundations are to be individual spread footings, all of which will be connected by a reinforced concrete slab over the entire ground area which will later form the first floor of the structure in addition to acting as a diaphragm and footing tie. All materials entering into the construction of the building are to be used in a manner that they will in no way interfere with the action of the steel frame. Any flexible material used adjacent to the steel frame would seriously interfere with the calculated action thereof. It is estimated that the total dead load above the reinforced concrete foundation slab be reduced 75 to 80% of the prequake masonry school structure and that the center of gravity will be dropped several feet for a building that will not in any way dangerously deteriorate during its logical life.

As has already been stated, the major portion of the exterior walls is devoted to window areas. The balance of the wall

area will be covered with sheet copper, the sheet copper cemented to Thermax. The ceilings of the classrooms are to have two layers of Thermax added to the steel trusses. The corridors and cross partitions will be protected with Thermax as detailed. The type of construction just described is for an entirely new building. In such a case the designer has absolute freedom of action in accomplishing what is necessary to be done.

Some Solutions to Problems

For your information and to illustrate what is being done by other engineers and architects and to inform you regarding some of the problems involved, it was thought that it might be well to first give certain of the more simple solutions that have been approved and then to give an outline of a typical building problem in connection with work now going on in Los Angeles. This problem was presented to the Architectural - Structural Engineering Advisory Committee and has since been adopted by structural engineers preparing plans for the Los Angeles City School District.

The first illustrations are with reference to existing one-story masonry buildings with roof and interior floors and roof of wood construction. The building has not the requisite lateral resistance and is to be strengthened.

One set of plans which we approved, provided that all masonry walls were to be removed and replaced with wood studs. The mortar in these walls was of very little or no value. The roof was stiffened and all inter-connecting or adjacent units tied together so as to reduce the relative movements. Full advantage was taken of both the roof and wall sheathing to transfer induced loads although the deflectors were of no consequence.

Another solution to a similar problem was to remove the outer four inches of brick and replace with a similar thickness of gunite. Where this serves as a bearing wall it has been customary to grooved the brick wall at intervals so as to provide minor columns 8½"x12" in size, when used in connection with an existing 13" brick wall. The remaining portion of the brick wall is thus definitely bonded to the gunite face and column pilasters. A horizontal bracing system was provided in the ceiling space so framed and tied as to transfer the lateral loads to rigid vertical diaphragms or walls.

Still another method was to remove the masonry walls, replacing them with steel studs and a gunite facing with a horizontal truss in steel at the ceiling and with rigid cross bents in steel or concrete. In all cases where the building was of any consequence a definite frame, consisting of steel columns and spandrel beams, has been provided to support the bearing load along the exterior walls, the steel studs and gunite slab forming a panel wall only.

Braced or Portal Frame

Numerous other examples might be given you, if time permitted, of illustrative types. However, I shall confine myself to a somewhat detailed discussion of a type of design that has been given considerable thought on the part of the Division of Architecture and the conclusions hereafter stated are the result of such joint consideration. This is the problem previously referred to as having been presented to the Advisory Committee.

The problem involves the installation of a braced or portal frame into a two-story masonry wall building without alteration of the masonry walls, save for the installation of occasional gunite pilasters designed to provide tranverse wall support.

A determination of the rationalism of any such design can only be made by analysis of what effect the application of lateral force to the building as a whole will

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126..00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Duraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 80c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)
Common, $40.00 per M.
Common O.P. select, $42.00 per M (average.)

1x6 No. 3—Form Lumber	$28.00 per M
1x4 No. 1 flooring VG	56.00 per M
1x4 No. 2 flooring	50.00 per M
1x4 No. 3 flooring	38.00 per M
1x6 No. 2 flooring	52.00 per M
1¼x4 and 6 No. 2 flooring	61.00 per M

Slash grain—

1x4 No. 2 flooring	$46.00 per M
1x4 No. 3 flooring	43.00 per M
No. 1 common run T. & G.	42.00 per M
Lath	6.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅝x3½ sq. edge Maple	140.00 M ft.		
	13-16x2¼" T&G	⅜x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing Wage—Floor layers, $7.50 per day.	13c ft.	11 ft.	10 ft.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (deivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel. 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).
Per Lb.
1 ton lots, 100 lbs. net weight 10¾c
500 lb. and less than 1 ton lots 11c
Less than 500 lb. lots.....11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).
1 ton lots, 100 lb. kegs, net wt. 10¾c
500 lb. and less than 1 ton lots 11c
Less than 500 lb. lots.....11½c

Red Lead in Oil (in steel kegs)
1 ton lots, 100 lb. keg s,net. wt. 12½c
500 lb. and less than 1 ton lots 12½c
Less than 500 lb. lots.....13c
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.30
2 coats, lime mortar hard finish, wood lath	.60
2 coats, hard wall plaster, wood lath	.55
3 coats, metal lath and plaster	1.20
Keene cement on metal lath	1.25
Ceilings with ¾ hot roll channels metal lath	.70
Ceilings with ¾ hot roll channels metal lath plastered	1.40
Shingle partition ¾ channel lath 1 side	.70
Single partition ¾ channel lath 2 sides 2 inches thick	2.70
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	2.60

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.40
3 coats Medusa finish No. 18 gauge wire mesh	1.75

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
3/8-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware. $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.60
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

have upon the various structural and non-structural elements of the building.

Fundamentals to be Observed

The following discussion briefly states the fundamentals which must be given consideration and the general criteria which must be satisfied if the design is to be rationalized to the point that safety of occupants is assured:

1. Stiffness of Walls as Contrasted with Braced Frames:

The ratio of stiffness of masonry walls to braced frames is large, varying from six to fifty times (the latter being an extreme condition assumed for a cross masonry wall 24 feet long and two stories in height, as compared with a similar frame X-braced with structural steel); in essentially all practical cases the relation is such that the masonry is preponderently stiff and would, at least initially, take all loads that the horizontal floor systems could deliver to it. When stair halls are constructed with masonry walls on either side, as well as with an adjacent exterior wall, together with reinforced concrete stairways and landings, thereby forming a rigid interconnection between the floors and longitudinal walls, a local condition of rigidity is created that will prevent the action of the frame insofar as its resistance to lateral movement is concerned. The assumption has frequently been made that the walls will fail and that thereafter the lateral forces will be entirely taken care of by the frame. This assumption is not necessarily tenable, since not only the exterior walls, but portions of the frame construction, as well, might fail, before the designed system would sustain appreciable load. Obviously both walls and stairways must either be isolated so that they will not be subjected to extraneous lateral load, or consideration must be given to the effect of such loads thereon.

2. Floor Systems as Related to Diaphragm Effect:

In existing buildings constructed with floors entirely of wood and without shear connections to the surrounding walls, the stiffness of these floors and their ability to transmit load is problematic; the usual double sheathing construction doubtless possesses much inherent strength, although its connections to the walls probably render it quite ineffective. In buildings that are constructed with a longitudinal corridor floor of reinforced concrete and which have occasional transverse masonry walls such as those which enclose stairways, the stiffness of this slab acting as a horizontal beam should be given detailed attention, since this corridor construction generally constitutes a potential stiff distributing diaphragm for forces transverse to the building axis. For example, a ten-foot corridor having a concrete slab cast integrally with bond beams at each wall would have a maximum deflection of from .3 to .7 inches when acting on a seventy-foot span and considered as a simple beam. Under actual conditions these slab distributing beams will normally develop considerable continuous action and in consequence the usual case will involve maximum continuous beam deflections of but $\frac{1}{8}$" to $\frac{1}{4}$". These maximum deflections are essentially less than those of the typical braced bent while for points within end thirds of the slab diaphragm span, the deflections of the two systems are entirely dissimilar; therefore it seems logical to anticipate that the major portion of the load will initially be transmitted through the slab diaphragm to the transverse or end walls. If and when these walls fail, then and then only may the structural frame be contemplated to function as an important lateral force restraining system.

3. Failure of Walls and Effect on the Structure:

The installation of a braced frame which, as indicated above, is relatively flexible in an inherently stiff masonry wall building necessitating the assumption that the walls will fail under lateral forces should be critically examined to ascertain whether; first, the walls are so substantially retained that there will be no possibility of hazard to occupants from dislodged portions or falling fragments; and second, the failure of individual walls or several adjacent walls may possibly introduce a destructive torsional effect on the building.

The first of these two items would seemingly necessitate the provision of a complete basket or enclosing frame to retain these walls, as it would seem quite impracticable to attempt to predict the stability of ruptured panels of any considerable size.

In this connection it should be remembered that the longitudinal movements of an earthquake shock which produces the typical diagonal tension or X-cracking in the walls will invariably be followed by a

transverse motion of comparable intensity which tends to dislodge the ruptured panels.

The second of the previous stated questions, that of torsional effects, is dependent upon the rigidity of the corridor slab as a diaphragm and may be somewhat reduced by the distortion induced in this member. However, an approximate analysis would nevertheless be necessary to demonstrate the capacity of the system to sustain such effects as might be induced. The limiting magnitude of load which the end bents may be required to sustain would approach one-half the horizontal force induced by the total building weight above the particular story considered. This limiting condition would obtain with an eccentricity between center of mass and center of resistance of one-half the building length and further assumes that the torsional resistance offered by the intermediate bents would be relatively small and may be neglected.

4. Conclusions:

In recapitulation it may be stated that the above reasoning indicates that the installation of a primary flexible structural frame into an inherently stiff masonry wall building can only be rationalized by a thorough consideration of, and provisions for; first, the torsional effects induced by a non-coincident failure in the rigid walls or stair construction; and second, a positive provision to prevent the dislodgement of fractured materials. This latter item may take the form of an analysis to demonstrate the adequacy of the walls to sustain such loads as may be imposed or it may lead to the provision of a so-called basket or enclosing frame with members so closely spaced as to definitely retain the enclosed panels. It is believed that such a basket should provide support for the brickwork at intervals not exceeding about five feet and that all edges of any masonry be likewise supported. It is further believed that for masonry of very inferior quality such walls should either be removed or the whole surface covered with a retaining membrane. In addition to these provisions it is believed necessary that the deflections of the lateral force system be limited to 1/600th of the story height for walls or vertical units and to 1/600th of the span for horizontal members such as bracing trusses or diaphragms.

It would further appear reasonable that a more economical solution of the problem might be devised by utilizing the potential strength of the existing corridor and wall construction which in all probability could be adequately supplemented by the installation of reasonable reinforcement. Such additional expenditure as might be involved for a lateral system of this more rigid type seems justified as an insurance against extensive earthquake repairs, the necessity of which can be anticipated if the flexible system were adopted.

In summarizing, while the Division of Architecture does not deem it proper to reject designs of the type described prior to the submission of data and of analytical check, nevertheless, in view of the above considerations, it will feel wholly justified in requiring a demonstration of adequacy based on a comprehensive design analysis, as well as thorough design provisions for all of the above mentioned items.

« « « « With the Architects » » » »

ARCHITECTS FOR COURT HOUSE

Alameda County, California, has voted in favor of a bond issue of $1,712,000 which will be used with an additional $462,000 grant from the Federal Government, for a new County Court House and Hall of Records. The voters also went on record as favoring the corner of 12th and Oak Streets, Oakland, as the site for the new structure. The plans will be prepared at once by a consulting board of architects, named by the Supervisors, as follows:

William E. Shirmer, Oakland, architect for St. Margaret's Church, Oakland, and apartment house known as "1360 Jones Street," San Francisco.

William G. Corlett, Oakland, architect for Financial Center Building, Peralta Hospital and Mutual Store Plant, Oakland.

H. A. Minton, Alameda, former architect for Bank of America and designer of many prominent Catholic churches and schools.

Carl Werner, Alameda, architect for Alameda High School, Oakland Scottish Rite Temple, and First Church of Christ, Scientist, Oakland.

James W. Plachek, Berkeley, architect of Berkeley Public Library, Federal Land Bank and combined hotel, church, store and apartment building for Glide Foundation, San Francisco.

SCHOOL ALTERATIONS

Plans have been completed by Erle L. Cope, structural engineer, 111 Sutter Street, San Francisco, for alterations to the Adams elementary school on Eddy Street and the Bayview school on Pomona Street, San Francisco. The total cost of the improvements is about $48,000.

ALHAMBRA POST OFFICE BUILDING

Bids have been taken for the construction of a two story reinforced concrete post office building at Alhambra, near Los Angeles, plans for which were prepared by John Walker Smart, 39 East Main Street, Alhambra. The cost of the building is estimated at $165,000.

ST. FRANCIS HOTEL REMODELING

Remodeling of the St. Francis Hotel is underway, following a $50,000 fire which destroyed the famous Italian ballroom. Specifications for the work have been prepared by Bliss & Fairweather, architects, San Francisco.

RACING PLANT

A contract has been awarded for the construction of a horse racing plant at Belmont, San Mateo County, for the California Jockey Club, Alexander Building, San Francisco. The plans were prepared by G. O. Wootten, 251 Kearny Street, San Francisco, and provide for a mile track, a grandstand to seat 10,000, club house and stables.

FLAT BUILDING

Frederick Amandes, architect, 1879-18th Avenue, San Francisco, has completed drawings for a two story frame store and flat building and four garages in the Marina District, San Francisco, for P. Pieri. The estimated cost is $12,500. Mr. Amandes is planning to build a studio for himself east of First Avenue, San Francisco.

OAKLAND FACTORY ADDITION

W. E. Schirmer, Financial Center Building, has prepared plans for a one story and basement, steel frame and brick addition to the Cardinet candy factory, 22nd Street, Oakland. The general contract has been awarded to the John J. Moore Company, 354 Hobart Street, Oakland, for $10,000.

$400,000 LIBRARY ADDITION

Complete plans for the $400,000 addition to the Henry Suzzallo Memorial Library at the University of Washington have been prepared by Bebb and Gould, Hoge Building, Seattle. These plans are now awaiting scrutiny by the official checkers for the Washington State PWA office.

GRAIN ELEVATOR

The Oakland Port Commission has been advised by the Carnation Co., Milwaukee, of its intention to immediately start construction of a 200,000 bushel grain elevator in the outer harbor for Albers Bros. Milling Company, a subsidiary. The improvements will cost $75,000.

MONTANA CHAPTER ELECTS

Officers chosen by the Montana State Chapter, A.I.A., to serve during 1934 are: President, Chandler C. Cohagen of Billings; vice-president, Fred A. Brinkman of Kalispell; secretary-treasurer, W. R. Plew, Montana State College, Bozeman.

WORK FOR SEATTLE ARCHITECTS

Bebb and Gould, architects of Seattle, have been retained to supervise the general construction program of the Newhaven Cooperative Association, which is promoting the establishment of Subsistence Homestead Colony, near Lake Sammamish in King County, Wash. The prospectus calls for placing 1000 families on five-acre tracts, and the organization of industrial and marketing units.

HEALDSBURG SCHOOL CONDEMNED

The Healdsburg board of education, at a special meeting, heard a report submitted by R. S. Lyman Jr. of the Division of Architecture, State Department of Public Works, in which the main building and wings of the public grammar school building were announced unsafe for occupancy. The board decided to abandon the entire building and hold classes in the American Legion hall.

A.I.A. CONVENTION

Plans for the annual convention of the American Institute of Architects, to be held May 16 at Washington, D. C., were discussed at the monthly dinner meeting of the Washington State Chapter, April 5, at the New Washington Hotel in Seattle. President Robert F. McClelland, presided. There are many vital matters concerning the profession to be taken up by the Washington convention.

IN CHARGE OF DESIGNS

Hollis Johnson, architect, of Portland, is in charge of the designing of houses to be built at Bonneville under the direction of the U. S. Engineer's office. The plans provide for standard small house requirements.

BERKELEY ARCHITECTS MEET

The Berkeley District Society of Architects, affiliated with the State Association, has held several spirited meetings to discuss the new State Building Laws. Edward H. Russ is president of the society and Gwynn Officer is secretary.

OAKLAND RESIDENCE

Williams and Wastell, 374-17th Street, Oakland, have completed plans for a one and one-half story cottage type dwelling to be built in Oakland for Victor Rohmer.

REDWOOD CITY DWELLING

Chester H. Treichel of Oakland, has prepared plans for a $4500 residence in Redwood City for an unnamed client. Bids have been received and taken under advisement.

PLANS NEW HOME

Karl J. Weber, 1737 Thirty-fourth Avenue, Oakland, plans to build a new home in Claremont Terrace, a sub-division of Piedmont Heights, Alameda County. The house will be Spanish design and have nine rooms, three baths and a two-car garage. The estimated cost is $10,000.

BERKELEY BUILDING PROGRAM

A report is expected shortly from Architects Bakewell & Weihe of San Francisco, on the new school building requirements for the City of Berkeley. This report is to be used in connection with a proposed $4,000,000 bond election.

LOS ALTOS RESIDENCE

Contracts have been awarded by Farr & Ward, architects, 68 Post Street, San Francisco, for a Spanish dwelling in Los Altos, Santa Clara County, to cost $14,000. Milton Haas is the owner.

SHELL OIL BUILDINGS

The Shell Oil Company is building an absorption plant at its refinery in Martinez. The company will also build an alcohol plant, the total cost of the two buildings being $400,000.

COUNTY HOSPITAL

A two story reinforced concrete county hospital is under construction at Redding from plans by O. A. Deichmann, 100 Sutter Street, San Francisco. The contractors are N. H. Sjoburg & Son, San Francisco.

COLLEGE SWIMMING POOL

The College of the Pacific at Stockton, will have a concrete swimming pool, plans for which are being prepared by Howard G. Bissell, architect, 327 East Channel Street, Stockton. The pool will be 35x75 feet and will cost $10,000.

BANK BUILDING

The Bank of America will build a one story bank building at Nevada City, to cost about $20,000. L. H. Nishkian is the engineer. The Bank also plans to erect a new building at Santa Barbara.

CLUB HOUSE AT ATHERTON

G. Albert Lansburgh, 140 Montgomery Street, San Francisco, has prepared plans for a one story frame and stucco Spanish style clubhouse at Atherton for the Menlo Circus Club. The building will cost about $15,000.

SAN FRANCISCO EXPOSITION

Initial steps for a commemorative exposition to celebrate the completion of the two San Francisco bridges were taken last month when the executive committee of the Bridge Celebration Founding Committee announced the appointment of George W. Kelham, architect, and Will P. Day, engineer, respectively.

The two will begin at once a survey upon which the exposition plans will be predicated. This survey will cost $10,000 and will take from 10 to 12 weeks. The final reports of the two men will cover available sites, physical characteristics, transportation facilities, preliminary sketches of building layouts and cost estimates.

Business and industrial firms have contributed funds for the survey.

Among the exposition sites to be studied are Yerba Buena shoals, Lake Merced, Presidio, Golden Gate Park and Islais creek.

FORMER CALIFORNIA ARCHITECT

Arthur G. Brown, Chicago architect, died on a train at Atlanta, Georgia, en route to Florida on February 18. Mr. Brown was a Californian by birth, having been born in Marysville, in 1869. His architectural experience began on the Pacific Coast. He journeyed to Chicago in 1889 and worked in the office of John M. Van Osdel II one year before returning to Los Angeles. A year later he was in the office of D. H. Burnham & Company, Chicago, during the building of the World's Fair of 1893. In 1893 he entered the office of Wm. A. Boring, architect, in New York. Since 1925 he had been in the employ of the Pure Oil Company as architect. He became a member of the A.I.A. in 1911.

F. H. REIMERS BUSY

The office of Frederick H. Reimers, 233 Post Street, San Francisco, has been quite busy on new work the past month. Drawings have been completed for improvements at the Sonoma Mission Inn, Sonoma County, also two houses in Thousand Oaks for F. Hilthon, a two-story store and office building in Vallejo to be occupied by Sears, Roebuck Company, and a swimming pool at Sonora.

MOTHER'S DAY STAMP

Postmaster General James A. Farley has authorized the issuance of a Mother's Day postage stamp. Mother's Day, which this year falls on May 12, will be the twentieth anniversary of the proclamation of President Wilson establishing a national Mother's Day. The stamp will in all probability be of three-cent denomination.

OREGON BUILDING CONGRESS

Prospects of steady improvement in the building industry were indicated in speeches and reports made at the second annual convention of the Oregon Building Congress held at Salem on March 9. E. M. Drew, president, presided.

C. I. Grimm, chief engineer for the Bonneville project, made the principal address, which dealt with the significance of the huge power and navigation development. F. H. Murphy, president of the Portland Chapter, spoke on needs for Federal projects in various parts of the state.

Three resolutions were approved as follows:

1. Endorsement of the plan of the American Builder for the Federal government to appropriate $1,000,000 for the benefit of farm owners.
2. Support for President Roosevelt's proposal to provide $250,000,000 to remodel farm houses.
3. Approval of the code for the construction industry.

BOND ISSUE DEFEATED

The proposed $20,411,487 bond issue for rebuilding the school buildings in the Los Angeles city school districts against earthquake hazard failed to secure the necessary two-thirds vote at the special election March 20. Complete unofficial returns were: For elementary school bonds 116,255, against 75,350. For high school bonds 116,420, against 76,761; for Junior college bonds 115,453, against 77,774.

The board of education has approximately $11,000,000 available with which it expected to start a three-year reconstruction program. What action will be taken in view of the defeat of the proposed new bond issue is problematical. The board may proceed with the program and resubmit the bonds later or it may revise the present program.

MUST REFUND TO CLIENT

In Judge Steiger's Court, San Francisco, Stephen Rosen of the National Building Company, 6 Fountain Avenue, San Francisco, was found guilty of practicing architecture without a certificate and ordered to make restitution of $50.00 secured from Mrs. Margaret Cotter of this city, in connection with plans prepared for an apartment building in Richmond.

The case was prosecuted by Arthur Onimous, Deputy District Attorney, and A. L. Bolton, representing the State Board of Architectural Examiners, Northern District.

BETTER HOMES COMPETITION

Roger H. Bullard, New York architect, has been awarded the gold medal for the prize-winning design in the Small House Architectural Competition for 1933, sponsored by Better Homes in America. Mr. Bullard won the medal for designing the one-and-one-half-story accessory building of the Salvage Estate at Glen Head, Long Island.

Honorable mentions, together with bronze medals were awarded as follows: One-story Class—Milton L. Grigg, architect, Charlottesville, Virginia; William I. Garren, San Francisco, California; and Edwin B. Goodell, Jr., Boston, Massachusetts. One-and-one-half-story Class—Miller and Warnecke, Oakland, California; Reinhard M. Bischoff, West Hempstead, Long Island; and Randolph Evans, New York. Two-story Class—Dwight James Baum, Riverdale-on-Hudson, New York; Martin L. Beck, Princeton, N. J.; Frank J. Foster, New York; O. Kline Fulmer, Cleveland, Ohio; and Royal Barry Wills, Boston, Massachusetts.

The Jury of Award consisted of F. Ellis Jackson, Chairman, Providence, R. I.; Chester Aldrich, New York; Seymour Williams, Rahway, N. J.; Archibald M. Brown, New York; and Ralph T. Walker, New York.

ARCHITECTURAL COMPETITION

An architectural competition for the design of a detached residence is being sponsored by the flat glass industry — represented by the Plate Glass Manufacturers of America, Window Glass Manufacturers Association, and Rough and Rolled Glass Manufacturers of America.

The competition is open to all architects and draftsmen. There will be twenty-nine prizes, aggregating $3,100. The jury of award will consist of seven architects of national repute, selected from representative sections of the United States.

Russell F. Whitehead, A.I.A., will serve as professional adviser.

ENGINEERS DISCUSS SAFETY LAW

The Structural Engineers Association of Northern California held one of its best meetings of the year at the Engineers' Club Tuesday evening, March 13th. Members of the Northern California Chapter, A.I.A., were present by invitation. Other guests were Geo. B. McDougall, State Architect, and Clarence H. Kromer, Principal Structural Engineer in the Division of Architecture, State of California. Mr. Kromer's address appears in another section of this issue. The meeting closed with a general discussion of the evening's topic, "Review and Preview of Earthquake Resistant Construction and Reconstruction."

PRINCETON UNIVERSITY COMPETITION

The School of Architecture of Princeton University announces for the scholastic year 1934-1935 two competitive prizes to permit men of unusual ability, who desire to complete their professional training, to profit by the opportunities offered by the School of Architecture, the Department of Art and Archaeology, and the Graduate School of Princeton University.

The prize winners will be exempt from charges for tuition, and will receive five hundred dollars ($500) each, in quarterly payments during their term of residence. Although not enrolled as undergraduate or graduate students, the winners will be eligible to reside in the Graduate College.

They will be required to take the courses in design, offered by the School of Architecture, and will have the opportunity of attending courses in the history of architecture and the allied arts in construction, in freehand drawing, in ornament, or in other subjects for which they may be prepared.

The competition will be held from May 19 to May 31, 1934. Further information concerning it may be had from the Director, School of Architecture, Princeton University.

PERSONAL

Kent and Hass, architects, have moved from the fifth floor to Rooms 602-603 Underwood Building, San Francisco.

Fred Aandahl prominent in architectural circles in Portland, Oregon, has become one of the partners in the firm of Sutton & Whitney. The firm name hereafter will be Sutton, Whitney & Aandahl.

TACOMA ENGINEERS CLUB

Gaston C. Lance of Russell and Lance, 719 South Seventh Street, Tacoma, read a paper on "Draftsmen Through the Ages" before the Tacoma Engineers Club on February 28. A. J. Russell, senior member of the firm, has fully recovered from shock and bruises suffered in a traffic accident.

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Chapter and Club Meetings

ARCHITECTS APPROVE FORM

An approved form of competition for the selection of architects for the design of public buildings was announced at the regular monthly meeting of Southern California Chapter, The American Institute of Architects, March 15.

Meetings with the Structural Engineers' Association and the Mechanical and Electrical Engineers' Association, for the purpose of working out schedules of fees, were reported by Henry Carlton Newton, chairman of the structural and mechanical engineers' committee of the Chapter's structural service relations division.

Henry F. Withey, chairman of the historical works committee, reported on the progress being made on the program for restoring historical buildings, which was put under way in February.

A motion to reduce the Chapter initiation fee from $25 to $10 for the remainder of 1934 was adopted.

Following the Chapter meeting the members attended the construction industries banquet.

Following is the form of competition for the selection of architects for the design of public buildings:

A. General:

1. The form of competition for the selection of Architects for public work as outlined herein would be under the general direction of the Southern California Chapter of the American Institute of Architects in conjunction with such other committees or individuals as may be appointed by the Owner.

B. Supervising Architect:

1. The Supervising Architect shall be selected by the Owner from a list of three (3) names which in turn have been nominated and approved by the Southern California Chapter of the American Institute of Architects and the State Association of California Architects, Southern Section.

2. In addition to the Supervising Architect, an Advisory Board shall be appointed consisting of four (4) architects whose function will be to act in an advisory capacity to the Supervising Architect. The Southern California Chapter of the American Institute of Architects and the State Association of California Architects, Southern Section, shall each submit three (3) names to the Owner and from the list of six (6) thus submitted, he shall select four (4) which shall form the Advisory Board.

3. The work of the Supervising Architect and the Advisory Board, shall consist, in general, of the following:

a. Preparation of programs of competition.
b. Approval of applicants for competition.
c. Checking and approval of all legal documents.
d. Checking and approval of all plans and specifications.
e. General administration of the work.

C. Competitors:

1. Any certified practicing architect may submit his application and if approved by the Advisory Board may enter the competition.

2. The Advisory Board may require the association of two or more firms for competitions exceeding a certain amount of cost. Any architect may be qualified on a particular project (even if not qualified individually) provided he associates with an architect properly qualified for the work.

3. The decision of the Advisory Board will be final in regard to the eligibility of all applicants for the competition.

D. Program Requirements:

1. Programs of competition shall be written in such a way as to assure the minimum amount of elaborate draftsmanship on the part of the competitors.

E. Jury:

1. The jury shall consist of one (1) member of each competing group elected by that group as its representative.

2. The jury shall inspect all the drawings and vote upon the various designs until the successful competitor has been selected.

3. In addition to the winning design, the jury shall designate the designs placed second and third.

F. Appointment of the Architect:

1. The successful competitor or group, upon recommendation of the design jury, shall be appointed by the Owner as the architect for the project.

2. The successful competitor must associate with himself one or more architects who have been approved by the Advisory Board for each $500,000 of the cost of the proposed building. How-

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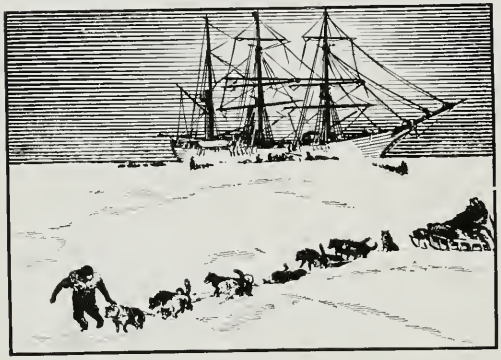

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ever, the maximum number of architects thus associated shall not exceed five (5).

3. Upon appointment, the Architect and his associates will proceed with the preparation of such additional sketches as may be required to further develop the project and upon the approval of such preliminary studies, proceed with the completion of the working drawings, specifications and contract under the direction of the Supervising Architect and the Advisory Board.

OREGON CHAPTER A.I.A.

The Oregon Chapter, A.I.A., met for dinner at 6:00 P.M., at the Oregon Grill, Portland.

Members and associates present were Messrs. Parker, Aandahl, Legge, Sundeleaf, Herzog, Linde, Logan, Roehr, MacPike, Wick, Marsh, Hemenway, Brookman and Howell .

President Parker presided.

The minutes of the regular meeting held February 20th, were read and approved.

The president welcomed Mr. Wick, new associate.

Mr. Parker read a letter from five A.I.A. members, requesting the Chapter to nominate Mr. Russell for reelection as President. Referred to the next meeting.

Mr. Parker read a letter from Mr. Holland, chairman of A.I.A. committee on Preservation of Historic Monuments. The parent society has taken up the matter of the old post office with the Treasury Department, and some encouragement has been received.

Mr. Linde moved that the report of the competition committee be accepted.

A discussion was had as to the desirability of competitions on private work. Mr. MacPike suggested a competition for the school work contemplated by School District No. 1. He was requested to make his suggestions in writing and present them to the secretary for consideration by the executive committee. Mr. Linde, in a reminiscent mood, told of some of his experiences with competitions.

The president reported that he had written Commissioner Bean that there had been some criticism of his recent vote when the old post office matter was before the Council, and invited him to explain his vote at the next Chapter meeting.

The president then called on Mr. Aandahl who gave a very interesting talk on Scandinavian culture and its relation to their architecture.

Mr. Parker plans to have a series of discussions on general subjects. At the next regular meeting Messrs. Brookman and Hemenway will lead the discussion.—L.D.H.

ARCHITECTURAL PUBLICITY

By B. C. GREENGARD, in *Institute Journal*

THE special committee appointed by President Russell to consider the small house problem, in its interim report, stresses the importance of making better known the value of architectural service. The need of well directed publicity towards this end has long been recognized, though efforts in this field have been rather spasmodic and hence ineffective. Advertising experts tell us that the secret of success in their work is found in constant repetition and keeping one's message continually alive.

Keeping everlastingly at it, is no doubt of prime importance in publicity work. No less important are the means to be employed. Occasionally a series of informative articles written by architects for laymen, have been published by newspapers. However excellent these articles may have been, it is doubtful if they were widely read. Radio talks, as Mr. Eugene Clute suggests in *Pencil Points*, would perhaps have a greater appeal. Mr. Clute recommends especially broadcasts by architects in smaller centers from local stations on topics suited to local needs. He says such broadcasting "is easy, it costs nothing" (an alluring argument these days) "and it can do untold good." Such a radio campaign, if persistently carried on, can no doubt do much to make the public conscious of the many ways in which architects can render valuable service.

Herein it is ventured to suggest still another modern instrument for informing the public as to the architect's work—namely, the motion picture. Movies photographed on 16 mm. film that can be shown on portable projectors, are widely used by manufacturers and industries for publicity purposes. These are often expertly produced and seldom fail to interest the public. One may note the appeal of such pictures at the World's Fair. Wherever exhibits include motion pictures one is always certain to find an audience gathered before it. It is believed that a film dramatizing the architect's work would also attract and hold the attention of the people.

The picture might visualize the designing and construction of a moderately priced residence, say one in the $12,000 class. To begin with it might show Mr. and Mrs. Owner, who for years have been gathering "ideas" for their future home. They have so far progressed that Mrs. Owner has drawn some plans, exactly what she wants, excepting that she is in doubt about the stairway. They know a "builder" who would take care of everything and "put up" the house for them. Fortunately they have some friends who know better. Mr. and Mrs. Owner are induced to engage a competent architect and we would then see our hero in action. We would see him in a series of conferences with the owners, working out their

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individual problem. He would study the site and show how its peculiarities are considered in the design of the house. The evolution of a series of sketches would be seen, floor plans and elevations coming into being. Adjustments necessary for coming within the owners' budget would be indicated. Then would follow the process of translating the approved sketches into working drawings and specifications. The routine of taking bids and the letting of contracts would be shown. In many such ways it could be made convincing how thoroughly the architect earns his fee. The actual construction of the house would then be illustrated from excavating to the last coat of paint, all under the expert supervision of the architect. It would be made clear that only through this supervision of the architect can assurance be had that plans and specifications will be faithfully carried out; that the architect is indispensible during construction as well as previously, ever guarding the owner's interests and making certain that the owner receives value for what he pays. Finally illustrations might be introduced showing the differences between jerry built houses and well constructed ones, the contrast between bad and good design.

It goes without saying that the scenario of such a picture would have to be worked out expertly with all the touches of human interest that would keep it from being "dry". There should be nothing amateurish about production and photography. Unlike the suggestion regarding broadcasting from local stations, the production of such a film would require an outlay of money. Yet information obtained from organizations who specialize in the production of such films, gives one reason to believe that the cost need not be prohibitive. In all likelihood it could be covered by the sale of copies of the film. The price per copy could be made reasonable enough so that each of our sixty-seven Chapters could subscribe for one. It is also likely that other organizations interested in advancing the cause of good design and construction in home building would wish to make use of this film. The picture would fulfill its purpose most effectively, as it could be shown to countless luncheon clubs, neighborhood associations, women's clubs and all gatherings throughout the country where potential home owners may be found.

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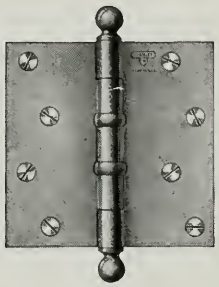

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By Jas. R. Ferguson

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The automatic proportioning of fuel and air so as to hold stack losses to a minimum is a matter which has received much engineering attention of late. Every engineer realizes the importance of this relation, but is more often than not handicapped in his efforts to maintain high efficiency by the lack of adequate instruments to aid him in setting his dampers to provide proper draft and to vary it in response to changes of load on the plant. Even with instruments to indicate when the setting of the dampers is right, the operator finds it extremely difficult to follow the swings in load such as are imposed on the average steam plant.

Many devices have been manufactured and sold for the purpose of regulating dampers, but outside of those developed for installation in central generating plants, which have been complicated and costly, none have been available that would, strictly speaking, regulate draft. This distinction is made because the damper position is not necessarily an indication of the draft as the latter varies with the volume and temperature of the flue gases, the number of boilers operating on a common breaching, atmospheric pressure, wind changes, etc. Furthermore, the common type of control does not provide for accurate adjustment of the damper motion to the motion of the gas valve except for a limited number of positions, and at the same time requires an excessive amount of attention.

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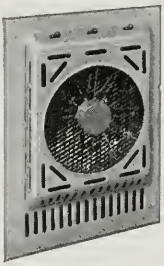

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CALAVERAS AWARDED TROPHY

Operating throughout 1933 without a single lost time accident, the Calaveras Cement Company of San Andreas has again won the safety trophy awarded annually by the Portland Cement Association, according to an announcement by J. B. John, chairman of the committee on accident prevention and insurance of the Association.

Previous awards were won by the Calaveras plant in the years 1931 and 1932.

The permanent trophy, an eight-ton sculptured monument which was given to the plant as the original award, will be fittingly inscribed with the date and record of the 1933 safety achievement of the workers in the San Andreas plant.

UNIQUE BOOK-FINDING SERVICE

Every person at one time or another is confronted with the problem of wanting a particular book that is no longer available through the regular publishing or bookstore channels. When a volume has reached that stage of scarcity, it is designated as "out-of-print" and commences to lead an elusive existence.

The American Library Service, 1472 Broadway, New York City, organized thirteen years ago a world-wide system to track down and snare out-of-print books in any language and on any subject. This service also extends to back numbers of all magazines.

Whether the book is technical or historical, genealogical or literary, or just a school book through which a grown-up wants to recapture his youth by re-reading, the American Library Service has built up a system adept at finding it.

The American Library Service also conducts special departments for the purchase of books, whether a single volume or a complete library, as well as autographs of literary or historical value.

NEW WINDOW FOR SCHOOLS

Dalmo Manufacturing Company of San Francisco announces a new type of window for schools, hospitals, and similar buildings—"Dalmo Sawyer-Design Combination Window." The new window is said to take its name from the fact that G. G. Sawyer, designer of San Francisco school buildings, collaborated in its conception, and because it allegedly combines the advantages of awning type and projected type windows. These advantages are indicated by more effective ventilation, increased protection against weather, greater security against intrusion, simplified maintenance, and greater flexibility in operation.

The new Dalmo window comprises three sash. The center portion embracing more than half the total vent area, is of the projected type and operates independently. The lower sash is the manual of operation for the other two which move together but in opposite directions. The lower sash, hinged at the bottom, moves up and in, simultaneously actuating a down and out motion of the upper sash which is hinged at the top. Special locking action at the jamb achieves rattle-proof, weather-tight fit of both these sash without the use of casement fasteners on wide windows. Pulley for shade is integral with locking handle on bottom sash. A double lock, one on each side of center sash near its base, prevents motion of projecting arms, and may be released only with key provided or one similarly shaped. In operation, this sash may be opened to any degree to augment ventilation provided by upper and lower sash, and may be completely reversed for convenient cleaning.

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MODERN HOMES

The colony of modern homes at the new World's Fair of 1934 will be bristling with new ideas and suggestions. Every house is to be completely redecorated. Some will be extensively remodelled. Others are to be removed, and in their place newer efforts and experiments will appear. The landscaping has the aid of a season's start. Gardens, massed shrubbery, wide lawns and flowers will furnish an improved setting for these homes.

Two new structures in the 1934 modern homes group will be a two-story steel house by General Houses, Inc., and the five-room bungalow of the Stran-Steel Corporation.

General Houses, Inc., developers of fabricated steel panel dwellings, promises a number of novel displays, besides the house itself. Among the new features will be a group of full-size model sections demonstrating the chief essentials of steel house construction and showing the progress that has been made in the utilization of the metal for home building. This exhibit of model sections will be given to the Museum of Science and Industry at the close of the Fair and will become a permanent unit in the museum's collection of architectural subjects.

The Crane Co. is erecting a new 285-foot exhibit. In the middle of the Crane Building an illuminated tower will rise 60 feet as background for a giant 45 foot shower. Exhibits will be entirely new and will demonstrate the progress made in plumbing conveniences. Health, protection and sanitary advantages of proper plumbing will be emphasized.

Keeping step with the houses, the special buildings of this area are undergoing remodeling or rebuilding of an equal importance.

In the effective setting provided by the simple lines and white stucco of the Kohler Building an entirely new exhibit is being planned which will lay its emphasis on the luxury of the modern bath.

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The Kohler Company has also taken over the site of last year's Dahlia Garden, which it plans to convert into a formal garden centering about a fountain and with its flowers planted in rotation to insure perpetual bloom.

Home Planning Hall, general exhibit building of this group, is devoting more space to the latest equipment and appliances for the home, and to booth exhibits by the companies who cooperate in the furnishing of the homes clustered about it. Exhibitors who hold their exhibits over plan materially to improve them in dramatic presentation.

Two other houses, which while not physically a part of this group are so related to it as to make their inclusion essential, are the farm houses being built as a part of the farm show south of the Home Planning Area.

One home is to be a model farm house of 1950, with working quarters on the first floor and living quarters on the second. The first floor will include the kitchen and a shower room, milk room, tool and storage room. The house will be planned with the maximum functional utility and efficiency in mind.

The second house, called the "subsistence farm house", is to be a structure of four or five rooms built not to exceed the cost of $3,000. This house is being designed to meet the needs of the present day effort to get people on farm plots in which all, or a great part of the family living, can come from the soil.

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OUTLOOK BETTER

[*S. F. Chronicle*]

Encouragement for the construction industry is contained in the various reports coming from the East which is the indication that the construction code may be signed this month. Another is that the country at the beginning of 1933 was actually short 500,000 home units and that this number has been increased during the past year. Builders locally have hesitated to go in for extensive operations because of the uncertainty of costs and the fact that firm bids could not be had for a sufficient length of time. When the code is signed it is expected that the industry will be stabilized thereby eliminating many of the risks attendant to building under present conditions.

Marked increases in building activities are certain to follow the signing of the code, according to Kenneth K. Stowell, editor of Architectural Forum. He declares that hundreds of privately financed projects all over the country have been held up pending the President's approval, which was recently granted.

Features of the new code Stowell said are that: Labor costs will rise, perhaps not as high as the old rates but considerably higher than present unofficial rates. They will be steadier. The unions will be given full recognition and collective bargaining will increase. Bids will be fairer. By demanding that duplicate bids be filed, the provisions eliminating bid shopping and peddling and other forms of "chiseling" will be enforced unless the entire spirit behind the code collapses.

Stephen F. Voorhees, New York architect, it is reported, will probably be elected chairman of the Construction Code Authority.

* * *

While recent surveys by different agencies of the housing needs of the United States do not exactly coincide, they all put the actual need for housing units well into the millions and the estimated

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cost at approximately 30 billion dollars, according to a review of statistics made by the Southern Pine Association.

COMPETITION

The Brunswick-Balke-Collender Co., institutes a competition for selection of outstanding designs for three types of bars—a Deluxe bar, a commercial bar—and a service bar.

It will be conducted under the rules and regulations of the American Institute of Architects and will be open to:—

(a) Architects, draftsmen, artists and interior decorators who hold University, College or Institute degrees.

(b) Architects, draftsmen, artists and interior decorators who do not hold degrees, but who have had at least two years practical experience.

(c) Students of architecture, art or interior decorating who have had two or more years of work prescribed by a University, College or Institute.

Competitors may collaborate and any resident of the United States, Canada, Mexico or the Hawaiian Islands is eligible to compete provided he or she has the above qualifications.

The competition will be in three divisions with separate first, second, third and mention awards for each division.

The highest prizes will be for $500, the lowest for $25 with a total of 117 prizes amounting to $5,000.00.

Applications for programs must be made in writing to the Professional Advisor, A. R. Clas, 333 N. Michigan Ave., Chicago, not later than June 1. The competition closes July 2.

HOME-BUILDING

A conference on "Home Building in Illinois" was held at the State University, Urbana, on March 15, 16, and 17, under the joint sponsorship of the Illinois State Geological Survey, and the Colleges of Engineering, Agricul-

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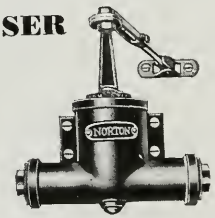

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ture, and Fine and Applied Arts of the University.

An impressive list of national and statewide professional associations showed their approval of the Conference by lending their cooperation and by sending representatives to the sessions, at which all phases of home construction and maintenance were discussed, with special emphasis on the mineral resources of Illinois available for home building.

Papers were presented by outstanding authorities on the subjects of Home Building Needs in Illinois; Principles of Good House Construction; Mineral Construction Resources and Products of Illinois; Reduction of Home Construction Costs; Elements Determining Investment Values of Homes; Reinforced Brick Masonry in House Construction; Heating Equipment and Fuels; Home Decoration; Rural Homes; Good Architecture and Landscaping; Insulation; Ventilation; and Air-Conditioning.

PLUMBER ACCUSED

George C. Asmussen, plumbing contractor at 763 A Street, Hayward, convicted recently in justice court on charges of illegally operating as a contractor in violation of state law, has announced he will appeal to the state registrar of contractors for a license.

Asmussen was convicted in the Hayward justice court recently on four counts of violation of the state law. He has alleged to have submitted bids on construction work without being registered as a contractor. Justice Manley Clark, Livermore, sentenced Asmussen to pay a $200 fine — $50 on each count—or serve 50 days in jail. He paid the fine.

Evidence showed that Asmussen submitted formal bids on four projects, two of which were allegedly filed after he had been warned by Deputy District Attorney Stanley Smallwood of Alameda County to discontinue contracting operations unless he obtained a registration certificate.

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THE ARCHITECT AND ENGINEER

MAY 1934

...This Issue...

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The Marshall Steel Cleaning Plant, Oakland, California

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Improved Design in Highway Drainage Structures

Bay Bridge More Than Twenty Per Cent Completed

California State Architect Discusses Features of New Earthquake Law

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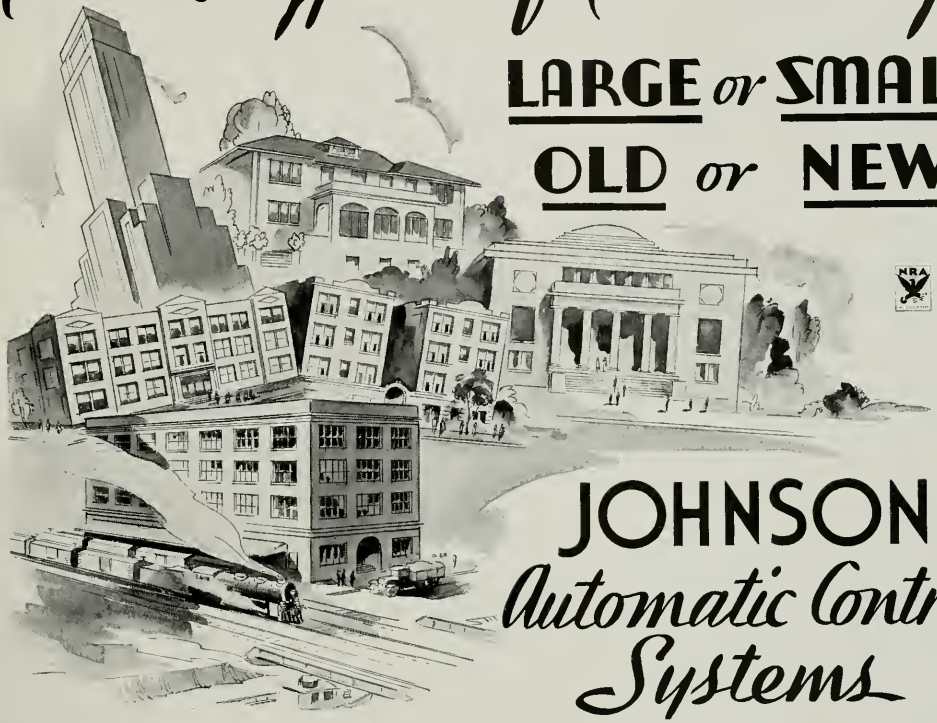

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PRESIDENT ROOSEVELT should do something for the building industry and do it *now*. We repeat what has been said many times before in this magazine—the country will not see complete business recovery until the second largest industry in the United States has been properly taken care of.

Conditions are again becoming acute. The architectural and engineering professions are suffering as never before. Contractors are idle with nothing to figure, material dealers are facing financial ruin. This state of affairs should not be allowed to continue longer. Write the President to do something for the building industry. Write him today:

⁂ ⁂ ⁂

PARTICIPATING in the recent Western Conference on Government, held at the University of California at Berkeley, March 20-30, were ten national organizations interested in public administration, which included:
American Legislators' Association,
American Municipal Association,
American Public Welfare Association,
Governmental Research Association,
International City Managers' Association,
Municipal Finance Officers' Association,
National Association of Housing Officials,
National Municipal League,
Public Administration Clearing House,
United States Conference of Mayors.

Although the programs of the thirty sessions dealt with a variety of current governmental problems, the readers of THE ARCHITECT AND ENGINEER would perhaps have been most interested in the four meetings of the National Association of Housing Officials. In accordance with the general plan of participation by the national executive of each organization, Mr. Charles S. Ascher was present and took a prominent part in the discussions.

Leading architects, city and county planners, housing authorities, economics, engineers, and public officials from all parts of the Pacific Coast region contributed papers and took part in the discussions, including the following: Elizabeth Ashe, Raymond Ashton, Edwin M. Bates, Ormond R. Bean, Vincent S. Brown, Louis Brownlow, Pearl Chase, Charles Henry Cheney, Mayor John F. Dore, Albert John Evers, Alice Griffith, Carl F. Gromme, Bryant Hall, Gordon Kaufman, Simon J. Lubin, F. B. Palomares, Hugh R. Pomeroy, L. Deming Tilton, H. B. Walker, David Weeks, C. J. S. Williamson, and Baldwin M. Woods.

Of the more than 650 delegates at the Conference, over one hundred were in daily attendance at the housing sessions. It was the unanimous opinion of those present that out of the carefully prepared papers and the interchange of thought in the ensuing discussions, many public officials obtained a clearer understanding of the problems confronting them, and suggestions for their solution.

It is hoped that the Western Conference on Government may become an annual event, and that the University of California, through its Bureau of Public Administration, may continue to serve as a central clearing house for officials in the interchange of ideas and information on their governmental problems.

—*Samuel C. May.*

⁂ ⁂ ⁂

JOHN S. STUART, feature writer for *Argosy Magazine*, heard so many comments, good and bad, about Radio City's gardens, that he dug into the thing and emerged with this interesting bit of information:

"New York recently looked down upon the gardens of Radio City with no little surprise. To waste, as they put it, valuable space in the very center of a great modern city, was amazing.

But few New Yorkers stopped to realize that Radio City has been architecturally patterned after the ancient city of Babylon. The plan of the Bible city was rectangular; all its streets very straight and around its squares, which were formed by these straight streets, the private houses were built with gardens in the center. Individual houses were detached and consisted of only three or four stories. Some of the city walls, however, reached a height of seventy feet!"

⁂ ⁂ ⁂

CHARGING that architects as a group have failed to co-ordinate themselves with other factors in the construction industry, Harvey A. Schwab, member of the Pittsburgh Chapter of the American Institute of Architects, declares that in the future the profession must demand higher standards of performance.

The new order in architecture will be built on whatever foundations are designed by the small group struggling to correct past errors, Mr. Schwab says. This group, he asserts, has an importance out of all proportion to its numbers.

"We believe that the future will require architects to be equipped with far greater artistic and technical skill than ever before," states Mr. Schwab. "Their ethical standards must be beyond question, and their economic, social, and cultural gackground sufficiently broad as to enable them to think clearly through difficult problems and arrive at conclusions of value both to their clients and the community at large.

"They must demand from themselves and their organizations, as well as from those agencies which execute their work, a far higher standard of performance. Finally, they must demand, and be worthy of, leadership in the construction industry, an dearn that recognition from the public at large which is rightly due the profession of architecture.

"At present the practice of architecture, as we have known it, is disappearing. Building activity requiring architectural services is at so low an ebb that the private practitioner has joined the ranks of the unemployed or has been forced to enter the services of some governmental agency as a draftsman, or, as a last extremity, obtain what he can under the Civil Works Administration.

"A fraction of the profession is thoroughly aware of the situation, and is making a determined effort to overcome past errors of omission and commission, and clear the path for the future. This small group has an importance out of all proportion to its members, since the new order will be built upon whatever foundations they design.

"An impartial diagnosis of the situation reveals the fact that architects as a group have enjoyed neither that recognition of their usefulness nor the public confidence in their work that their profession should command. They have not co-ordinated themselves with the other factors in the construction industry, nor have they interested themselves in the civic scheme.

"It is evident that they have succumbed, in greater or less degree, to the demand for bigger and more cleverly designed buildings, instead of maintaining that sound and stable judgment, tempered with a keen appreciation of human relations, which is the background of the basic philosophy of architecture."

VOLUME 117
NUMBER 2

THE ARCHITECT AND ENGINEER

MAY
1934

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Frederick W. Confer, Architect

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COURT, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY
FREDERICK L. CONFER, ARCHITECT

THE
ARCHITECT
AND ENGINEER

MAY 1934
VOLUME 117
NUMBER TWO

TWO INTERESTING HOMES BY F. L. CONFER, ARCHITECT

CALIFORNIA, on the shore of the Pacific, has been peculiarly fortunate in having definite influences on the development of its architecture. Strongest of these, perhaps, has been the Spanish Colonials. Love of the simple and the straight forward, colored by their natural poetic inheritance, has played an important part in the development of a style commonly referred to as "California Colonial." Counteracting these colorful and romantic influences were the more dignified views of the New England sea captains who touched our coast in the course of the China trade. Through the intermingling of these divergent lines of influence there developed a style particularly adapted to California.

The two houses by Mr. Confer illustrate in varying degrees these historic precedents. In the unusual and interesting plan of the house for Mr. and Mrs. M. C. Wantz, the desire for privacy and seclusion, so dear to the hearts of the Spaniards, is admirably achieved. This plan lends itself to the gentle sloping Berkeley hillside on which it is located and affords the maximum protection from the prevailing breezes.

The low, rambling outline of the mass of the building is reminiscent of Spain, while many of the details of the design are definitely New England in character. This is especially true of the interior treatment.

Common white washed brick, combined with white washed flush horizontal siding, produce an effect of the utmost simplicity and charm.

In the home for Mr. and Mrs. Raymond Bowers the lines of influence are more decidedly New England. However, the use of the walled forecourt and secluded rear terrace might easily be attributed to the Spanish motif.

This particular lot, due to its situation, afforded an opportunity for a more open type of development. The forecourt being amply protected by trees, removed the necessity of a high wall.

Here again Mr. Confer has used simple materials successfully. The exterior is a combination of white washed lapped siding and white washed brick. The interiors again show New England influence. The

ENTRANCE COURT, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY

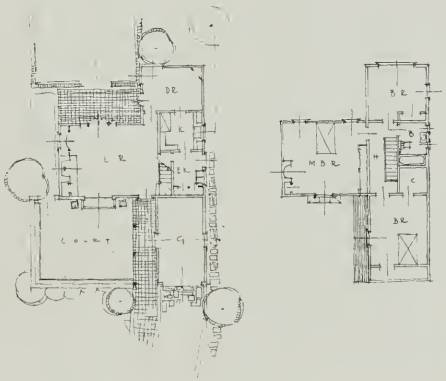
FREDERICK L. CONFER, ARCHITECT

HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY
Frederick L. Confer, Architect

living room, sheathed with knotty pine panels, is stained a light honey color. The dining alcove has simple plaster walls with a pine beamed ceiling and knotty pine cases.

The use of dormer windows and quaint wall paper in the bed rooms upstairs complete the New England picture.

Mr. Confer has achieved in these two houses a fresh expression of our California precedents and has demonstrated the practicability of a straight forward treatment and absence of unnecessary ornamentation to the end of a minimized cost of construction.



PLANS, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY
Frederick L. Confer, Architect

LIVING ROOM BAY, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY

FREDERICK L. CONFER, ARCHITECT

FIREPLACE DETAIL, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY
Frederick L. Confer, Architect

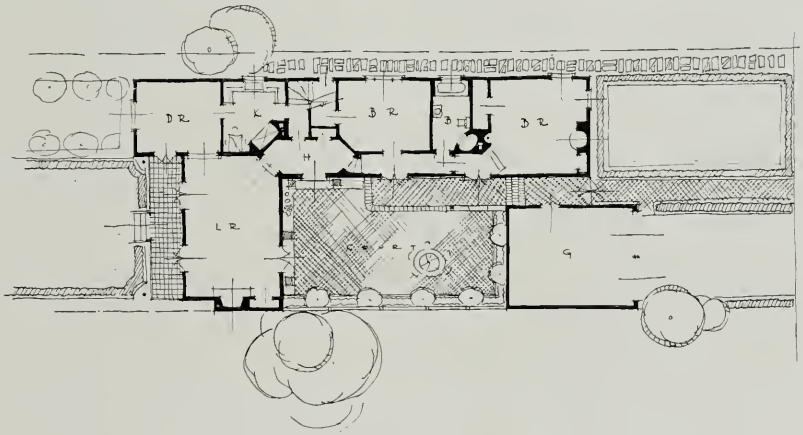
STAIR DETAIL, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY
Frederick L. Confer, Architect

DINING ALCOVE, HOUSE OF MR. AND MRS. RAYMOND BOWERS, BERKELEY
Frederick L. Confer, Architect

ENTRANCE DETAIL, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY, CALIFORNIA

FREDERICK L. CONFER, ARCHITECT

ENTRANCE COURT, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY
Frederick L. Confer, Architect



PLAN, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY
Frederick L. Confer, Architect

LIVING ROOM, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY
Frederick L. Confer, Architect

DINING ROOM, HOUSE OF MR. AND MRS. M. C. WANTZ, BERKELEY

SOME CONFER MAXIMS

Every house is a compromise between the ideal and the practical. . . . The more nearly these qualities complement each other the greater will be the satisfaction in the home.

Good design aims at simplicity and honesty of expression without ostentation. . . . Good architecture is always sound economy. . . . Materials should be used consistently. . . . Attempts to imitate one material with another are unwise and generally lead to absurdities.

A house designed by a skilled architect and erected by a reliable contractor will be satisfactory. . . .

One very common fault, especially in small homes, is the tendency to use too many distracting features. . . . A small home can not be an exhibit of all of the designer's ideas.

SKETCH FOR RESIDENCE IN PIEDMONT PINES, CALIFORNIA
Frederick L. Confer, Architect

SKETCH FOR HOUSE IN PIEDMONT PINES, BERKELEY, CALIFORNIA
Frederick L. Confer, Architect

Gunn Carle Venetian Blinds

ENTRANCE DETAIL, BUILDING FOR MARSHALL STEEL CO.
OAKLAND, CALIFORNIA

ALBEN FROBERG, ARCHITECT

NEW PLANT OF THE MARSHALL STEEL COMPANY - - OAKLAND

by
FREDERICK JENNINGS

A TRITE remark, perhaps, but the fact remains we are living in a period of change, an era of re-organization of social, political and business conditions and methods far more radical than the normal attributes of our natural growth. Recognition of this fact has probably been the dominating influence in planning and constructing the newest unit of the dyeing and cleaning plant of the Marshall Steel Company in Oakland, California. In an ideal spirit of collaboration, Mr. Steel brought to his architect the benefit of thirty years' experience in the cleaning business, together with ideas gathered in an extensive survey of the most modern plants in the United States and Canada.

The plant site on Telegraph Avenue, near 55th Street, is in the approximate geographical center of the East Bay region. A well on the premises furnishes ample water supply for all operating needs.

It will be noted from the plot plan, that the several buildings and departments are grouped around the cleaning house structure which is the heart of the plant and where the washing and cleaning in solvents is done. This unit is completely fireproof with anti explosion skylights and a high pressure steam fire extinguishing system . The plant is equipped with new and improved machinery with a working capacity that is ample for years to come.

The main building facing the street has a floor area of over twenty thousand square feet and contains the various departments devoted to the manual operations of the cleaning business. In addition, therein is housed a complete and fully equipped laundry department.

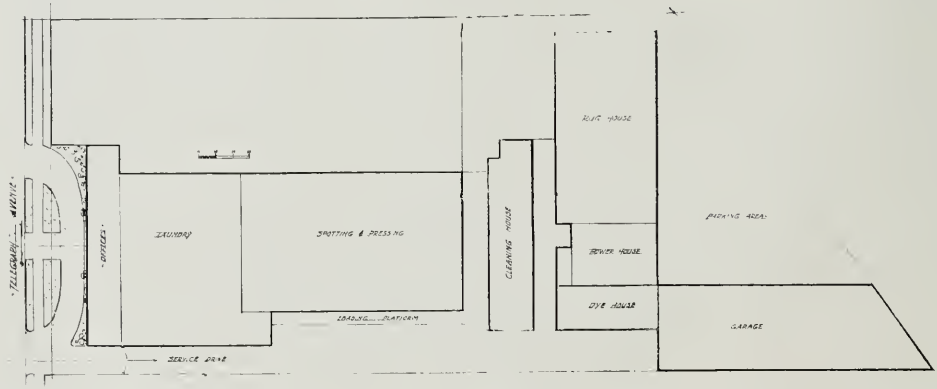
Among the many planning problems successfully solved, is the provision made for daylight illumination. Natural ventilation throughout the plant has also been ingeniously provided. Employees welfare was given serious thought in the provisions for adequate parking area and in sanitary and recreational facilities.

DYEING AND CLEANING PLANT, MARSHALL STEEL COMPANY, OAKLAND

Cognizance was given the fact that the the Bay Region being subject to periodic seismic dis-

H. J. Christensen Company, Builders

BUILDING FOR MARSHALL STEEL COMPANY, OAKLAND
Alben Froberg, Architect



PLOT PLAN, MARSHALL STEEL PLANT, OAKLAND
Alben Froberg, Architect

turbances, the entire plant was designed and constructed to best resist earth stresses.

An outstanding feature of the Marshall Steel plant is the electrical installation which includes, in addition to the usual motor equipment found in cleaning and dyeing plants, a number of machines especially designed for this type of business by Mr. Steel and his assistants. For example, there are special lifts for handling of rugs and carpets and a new type of cleaning machine for cleaning them. In the dye plant there are improvements in the dyeing machinery and in the laundry Mr. Steel has made improvements in the ironing equipment and in the washing equipment which eliminate many of the troubles commonly incurred in this type of work.

The plant includes a complete explosion proof installation of motors and lighting fixtures. Practically all of the machinery is individually driven and controlled, reliability and safety being the dominating factors in the layout and control of the equipment. A modern call system of electric gongs is operated from the phone exchange office with a code call.

The entire plant has a high intensity lighting system, the laundry using 300 Watt Holophane prismatic reflectors which provide approximately twelve-foot candles uniformly over the entire area. The office is well above standard in the outlets provided and is illuminated with beautiful fixtures of modernistic design. The exterior of the building is equipped with a Neon sign designed to give good daytime value as well as night. In addition, the entire front is floodlighted.

The future is still veiled to human thought but the hope remains that the combined efforts of the owners, architects and builders of this establishment, now so new and modern, will result in a postponement of inevitable obsolescence for many years to come.

ENGINEERS EXPLAIN REASON FOR LEANING TOWER OF PISA

IN answer to inquiries, a number of which have been received recently, concerning the reasons that caused the builders of the Leaning Tower of Pisa to deviate from the vertical line of about twelve feet, two explanations are offered. It is held by some experts, who have visited the tower, that the foundations were constructed in a careless manner and, that later the builders adhered to this error in order to prove their mechanical skill as applied to the laws of gravitation. It is now a fairly well-ascertained fact that the peculiarity of this Leaning Tower at Pisa is the effect of accident, and not of design; in fact, the west front of the cathedral and several of the columns are also out of the perpendicular, and the high altar, a late Renaissance structure, had settled down so much at one end that it was found necessary to take it down and re-erect it in 1825.

It is evident from the spongy nature of the soil that the leaning took place long before the completion of the tower, because the upper stories have their columns longer on one side than the other, and the top story of all, a later addition, is built upright. The upper stories, also, are set back more on the inner than the outer sides, all of which points to the fact that the builders were desirous of remedying the defect.

Though the walls of this celebrated structure are thirteen feet thick at the base, and about half as much at the top, they are constructed throughout of marble. The entire height is 183 feet, but the ascent is easy by a stair in the walls, and the visitor hardly perceives the inclination till he

reaches the top, and from the lower edge of the gallery looks "down" along the shaft receding to the base. There are seven bells in this campanile, so arranged that the heavier metal may counteract the leaning. One of them, called Pasquaveccia, was tolled when criminals were taken to execution.

The celebrated circular Leaning Tower at Pisa was constructed by Bonanus, probably an Italian, and Wilhelm of Innsbruck, a German. It harmonises perfectly with the cathedral and the baptistery, the three buildings, which stand in dignified seclusion at the north end of the city, forming a group perhaps unparalleled for beauty in Southern Europe. The lowest story is formed of blind arcardes and half columns similar to those in facade of the cathedral, whilst the seven upper divisions are open arcades with isolated columns, running up to a height of about 142 feet. The style is pure Romanesque, simple and very elegant in all its details.

Experts agree that the tower as a model is ill-advised and too dangerous to attempt to emulate with massive materials. It might be accomplished with steel frames for an exhibit, but not for commercial purposes.

—STONE

SKETCH BY BERTRAM GOODHUE

NEW OBJECTIVES IN HOUSING

by

CHARLES HENRY CHENEY

Leading housing and city planning authorities participated in the Western Conference on Government at the University of California, Berkeley, March 28, 29 and 30. Samuel C. May, Director, Bureau of Public Administration, University of California, presided. One of the outstanding papers was read by Charles H. Cheney, formerly of San Francisco, now of Palos Verdes. Mr. Cheney is Consultant in Housing, City and Regional Planning for the California State Commission of Immigration and Housing. His paper follows:

THE great housing problem of the country is to provide good houses for the lower two-thirds of the wage-earners of the country — for those who earn $2000 per year or less, and who can afford to pay only $15.00 to $35.00 per month for a home, most of them nearer the lesser amount. The upper third who can earn more than that will probably somehow be provided for by private enterprise, which, however, cannot afford to build for the more numerous poor man.

There are approximately 1,650,000 families of this lower-income group in the eight Pacific states comprising the Southwest and Northwest Regional Planning Groups recently established by the National Planning Board.

One million families of this lower-income range live in California (including those on farms, which are less than ten per cent of the total.) These people in the past have had to take what they could get in the way of housing—mostly ready-made, jerry built and exorbitantly financed buildings, overcrowding fictitiously priced land—whether single dwellings, flats or apartments. A large part of them could obtain only badly deteriorated, obsolete buildings for which the owners could or would make no repairs.

Deteriorated Districts and Slums

Thus the poorer paid, and the down-and-outers, take to the worst and oldest buildings, and we have slums. We have them in nearly every city of any size on the coast, though local citizens misguidedly try their best to overlook it. We have rural slums, too, in plenty — farm houses with few, or no modern conveniences. Except in San Francisco and Los Angeles county farm homes still are exempt in California from the requirements of the State Housing law that insists on windows in the bedroom! No wonder the women folk and younger generation so often prefer to live in the city!

The commonest phenomenon of our unplanned American cities is the core or districts of obsolete, deteriorated dwellings, or of once good dwellings depreciated for lack of effective zoning, surrounding the main business center — the older the city, the larger and more numerous these districts generally will be. Here buildings out

of repair are being crowded beyond reason. The last four years have aggravated the situation because the depression caused a doubling up of families that has destroyed all ordinary American standards of living. We simply don't realize that there are thousands of families now living in our midst, having only one room for an entire family of as many as six and eight persons! And this in old buildings never intended or arranged for the purpose. No wonder welfare and juvenile workers point to these deteriorated districts as the places where the greatest number of delinquency, crime and hospital cases are to be found.

We have an undue share of such conditions in Pacific Coast cities. San Francisco, Oakland, Los Angeles, Portland and Seattle have many square miles of deteriorated residential areas. These deteriorated districts are the future slums. Nothing is being done about them. They cost the taxpayers enormous sums for extra police, fire, hospital, court, welfare and other services. At the same time these properties are often tax delinquent.

Actual slum areas are deteriorated districts neglected until the buildings are no longer fit for human habitation. They become lacking in light and air and sanitary requirements, and so badly congested, that they show the worst disease, crime and other infectious troubles of society. Their cost to the tax payer is beyond all reason. They are the danger spots of all cities.

Population—Growth or Loss?

Population is the measure of housing needs. While it seems certain that the country's population is approaching a static condition, it is reasonable to suppose that with any return to normal the same climate that heretofore attracted people to California will keep on bringing them here. There is also the elemental urge of population to drift westward to be taken into account.

Yet the centers of our larger metropolitan districts are certain to lose population to the outskirts, because of obsolescence of housing, decentralization of industry and the wider range given even the great number of poorer wage-earners by the automobile. San Francisco proper is hastening this by opening up the bay bridges and by resisting the building of modern housing. Manhattan lost 900,000 population, or 35%, since 1910, while the outer boroughs of greater New York gained. Will San Francisco have a comparable loss, or will it create modern housing for the lower-income groups and tackle slum clearance in the same big-visioned way that it went about its bridges and other great works?

These are complex problems. Their solution is difficult, but of fundamental importance.

Good Home for Every Family

That every family, even of the lowest-income group, be provided with a decent and attractive home should be the objective of modern society. It is essential to a sound planned economy—and it won't hurt the real estate interests either. Obsolete buildings and slum conditions spoil the market for good property—worse, they depreciate it. They add to good property's tax burdens and generally don't pay their way themselves. Only united public action can remedy them.

There are two necessary solutions to the housing problem:

First, to build enough new dwellings to take care of the need of this lower two-thirds of the wage-earners. This can be done most quickly and easily on areas of land that are clear of buildings, and comparatively low in price, to be found in the outskirts, reasonably close to industry.

Second, slum clearance, by tearing down existing bad structures and rebuilding low-cost housing on the same area, with plenty of light and air, playgrounds, etc. This takes a year, to condemn, acquire and clear the property, to close streets, to rearrange the area for modern site planning, etc.

Urban Subsistence Gardens

Another important new objective of housing is to provide with each home a lot large enough so that the low wage-earner, who may hereafter average only three days a week of work in industry, may raise enough vegetables, poultry and fruit to feed his own family. Economists are anxious, on the other hand, that this lot be not large enough to raise more than the one family can use, in order that there be no excess products in competition with regular agriculture. Such a lot in California means from a quarter to a third of an acre net, including the house site and flower garden, garage and drive, chicken house and chicken run, goat house, alfalfa bed and space for fruit trees. (Note 1.)

This is an ideal standard of housing, yet not unreasonable.

All the people of the United States could be comfortably housed on 10% of the area of California and we would have only three families per acre.

Obviously these urban subsistence gardens need to be on the outskirts where land is cheap and where a reasonably large community can be built in one operation (75 to 200 acres) so that playgrounds, community quarters and a community agricultural adviser can be maintained as a part of the scheme.

Such urban subsistence gardens should not be confused with the Subsistence Homesteads, of several acres each, now being fostered by the government for the rehabilitation of the unemployed. While the latter projects need modern site planning and community organization they are in a different class from city housing. They are to meet the "flight from the city," about which Borsodi writes so understandingly. Census reports show that over 500,000 city dwellers of America went back to the farm in 1932. (Note 2).

Improvement in the type of house and in methods of construction is needed. As construction gets better, housing becomes a better investment and makes longer loans possible.

With government loans at 4%, amortized in 25 years, we can furnish good houses in California on quarter acre sites, including all that is needed for urban subsistence gardens, at $6 per room per month. This is without profit, except the limited dividends of 6% on the 15% investment required by the government.

If the government loan rate could be reduced to 3% it is said the monthly charge for the same home could be reduced to $5 per room per month. Why should the government not do this? The money is used without profit, for a public purpose.

To keep room rentals down within reach of the low-income group, slum clearance buildings must be kept down in height. Recent studies seem to show that two-story flats are the most economical and that they should be furnished for from $6.50 to $8 per room in California, depending on land cost. Reduction of the interest rate would lower these rentals also.

Housing and Town Planning

It is clear that any permanent solution of the housing problem must be a well studied out part of a general city or regional plan. Else premature deterioration of the housing will take place.

Two schools of thought have divided those interested in planning in this country.

One has believed it hopeless to try to untangle the existing mess that our cities are in. As in England, they urged that the best approach to the problem was to build model communities on the outskirts of the cities. This idea was most prominently advocated by the Community Planning Committee of the American Institute of Architects.

The other school, generally followed by the city planners of the country, has believed in trying to bring order out of the existing city, through laying foundations of zoning, major street plans, etc. Lately these schools have found that a combination of both methods is probably advisable.

In housing we need a comprehensive program for each metropolitan area that will provide both for new low-cost dwellings in the outskirts, and for slum clearance, each properly related to the other. As the present occupants of a slum pay very small rents, it is seldom possible to rehouse them in good buildings on the same site, for rentals within their reach. Hence it may be necessary to provide them with a cheaper type of housing only possible in the outskirts. Thus both the solutions of the housing problem mentioned above may be involved in any comprehensive plan of housing for a city.

Housing Programs for Two Cities

A modest initial program of housing for San Francisco and Los Angeles metropolitan districts would include (for each) two or three slum clearance projects, and five or six garden home projects in the outskirts. There is need for the housing, the building industry is flat, unemployment very bad. Ways should be found to cut the red tape and put men to work.

"You would fight unemployment more quickly if you could start building new houses on lands already clear," said Raymond Unwin, the great English authority on housing and town planning, to the American Civic Association, in January. Discussing "Britain's experience in low cost housing," he pointed out that if we are not very careful when we clear slum areas, we are very liable to drive the slum dwellers into other deteriorated districts and thus only spread the evil a little further. (Note 3)

Government Aid Necessary

Housing is a large community undertaking. It requires the technical advantage of large scale planning and construction. It must necessarily be done at cost in order to afford rentals within the reach of the low income groups. There is no profit in it for private enterprise, and hence we can only expect to see it done by government (local or national), or with government loans to limited dividend companies. Housing is in the nature of a public utility, and can best be solved by treating it as such.

The national government has realized public responsibility for housing and made it one of the principal items of the recovery program. But because of the complexity of the problem the Housing Division of the PWA has been very slow in getting started upon actual new projects. Some of the ablest men of the country have worked under Robert D. Kohn, its director, for many months, trying to make their problems understood by the public. Slum clearance was announced as the principal objective, but they have found it very difficult to put into actual construction. In fact the only PWA housing projects under way until recently were single family dwelling schemes in the outskirts.

But one PWA loan of $3,230,000 has been allocated to a Pacific Coast housing project, out of the $150,000,000, set aside to the Housing Division. No part of the $100,000,000 of this sum earmarked for slum clearance has yet been assigned here.

Yet our need for housing is great, and our unemployment even greater.

We are 3000 miles from Washington. It is expensive in time and travel for us to present our case there in person, as those at other closer centers are able to do; hard to get their representatives out here to see proposed projects on the ground. We should persuade the Housing Division of PWA to have a responsible regional representative here, to treat our situation as a regional problem.

Actual Need for Housing

The need for housing construction exists in all parts of the country. In recent articles in "The New Republic" New York housing experts stated that five billion dollars per year, for several years, is needed for housing projects. (Note 4.)

We certainly could use $100,000,000 of such money in California annually for several years, without overbuilding. That would provide homes for less than 3% of the income group we have been talking about.

The building industry, now dormant, is the second largest in the country. Indirectly it affects practically everyone.

What sounder public policy could be adopted to solve one of our worst social problems and at the same time end unemployment? Among the many good reasons for housing construction now are:

Nearly all the money goes into labor, most of it into labor at home.

Improving the housing of low paid wage earners raises their standard of living.

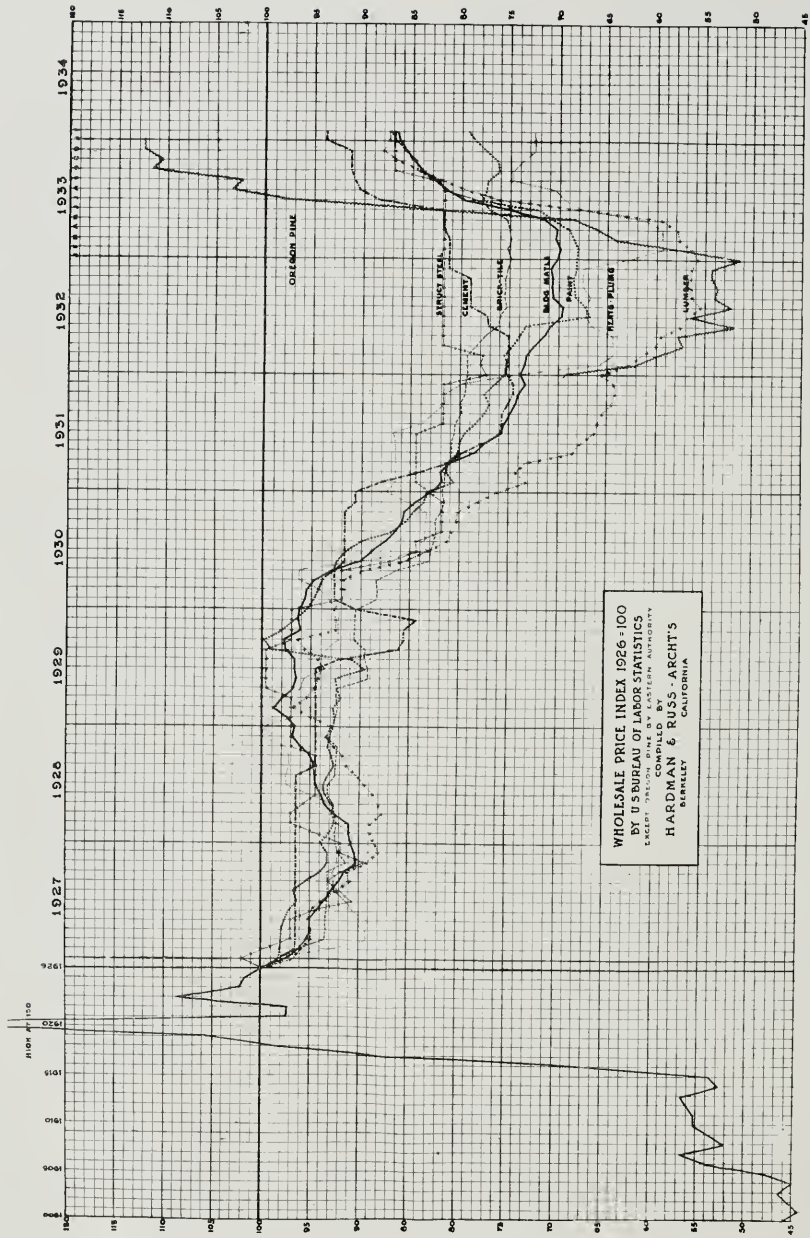
It is practically self liquidating, a safe investment for government money and adds little to the burden of the public debt.

In many cases it transforms depreciated and tax-delinquent property into a permanent revenue asset.

It is not likely to compete with private enterprise, because these wage-earners cannot pay the profit required by private enterprise.

Notes:—

1. See brochure of Los Angeles Chamber of Commerce on "The Small Farm Home."
2. Ralph Borsodi, Flight from the City.—Harper, 1933.
3. Raymond Unwin, Britain's Experience in Low-Cost Housing—in The Octagon (Journal of the A.I.A.) Jan. 1934.
4. Albert Mayer, Henry Wright and Lewis Mumford, New Homes for a New Deal—a Concrete Program.—*The New Republic*, Mar. 7, 1934. See also Feb. 14, 21 and 28.



THIS CHART IS A GRAPHIC INDEX OF THE FALL AND RISE OF BUILDING MATERIAL PRICES FROM 1927 TO 1934

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DEMAND FOR BETTER AND CHEAPER HOMES

Better homes for less money, was the keynote of the Home Building Conference held recently in Illinois. Men prominent in the architectural and engineering professions participated in the proceedings, the highlights of which are printed below:

LESS than half the homes in America measure up to the minimum standards of health and decency. It is estimated that 95 per cent of the farm homes and some 80 per cent of the village homes of America lack a sanitary closet within the building and almost as many lack running water.

"This rather drab picture in what we fondly believe to be one of the enlightened nations of the earth," says Rexford Newcomb, Dean of the College of Fine and Applied Arts, University of Illinois, "may be difficult to understand in the face of our abundant resources. . . . So long as our social fabric is predicated upon a pattern in which the family is the unit, so long will the home be an important American institution and home-making the most important task of our people. . . . *It is the birthright of every American boy and girl, no matter what the economic status of his or her parents, to have the decent, cleanly, sanitary, and orderly environment necessary to the beginning of civilized human life. This much must be vouchsafed to the rising generation.*

"It appears that adequate housing for a large percentage of our population will depend upon one or another of two procedures: (a) A change in the economic balance that will insure to the low income groups a larger participation in the national wealth; (b) Governmental participation in housing to the extent that low income groups may be insured decent habitations at a rental or purchase price commensurate with their incomes. . . . *America cannot* long dally with the *solution of this problem.* It is no longer a problem for individuals, for housing experts, sociologists, and the like; *it is a problem of the gravest national concern and all must turn their hands and minds to it with a will* . . . through the production of good building materials at cheaper prices, through the application of simpler and more direct design and fabrication methods, and through the encouragement of an economic and socially reasonable scheme of land utilization."

L. H. PROVINE, HEAD, DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF ILLINOIS

"The need for efficient, attractive, safe, economical, quiet, fire-proof homes now demands the attention of this country. . . . . Many hours of research and thousands of dollars have been spent in an effort to produce a low-cost house. There are sectional houses, pre-fabricated units for houses made from older materials and new materials. but there is much left to be done. Not

only must the materials be suitable, but the method of jointing, assembling, and fastening must be studied. All materials used in the low-cost house must be so selected and so used as to reduce obsolescence and depreciation to a minimum. The tendency is to look for something unusual, something new, but the solution will come from some simple combination of common raw materials.

"The first cost of a house may be cheaper in one form of construction than in another, but will the total cost over a period of years be the less? A fire-resisting, well-insulated, well-built house will usually have a higher initial cost, but over a period of years this house may be the cheaper. . . . The people of this country will not become nomads, living in tin houses on wheels; they want real homes. These homes must be designed to suit the needs and tastes of each family, not built by the hundreds, all alike."

HARRIS J. HARMAN, PRESIDENT OF PEORIA HOME BUILDERS:

"Building ranks second among the industries of our nation. Home building represents 56 per cent of this enormous business. Providing homes at more moderate cost, therefore, is not only a great social problem, but a great economic problem as well. . . . There are four major divisions in the development of homes from the producer to the consumer — (1) financing, (2) selling, (3) building at the site, (4) production of materials and manufacture of equipment. Those who participate in each division are all partially responsible for the high cost of building construction. Every manufacturer of building material, and every trade represented, is advertising, promoting, and fighting for the largest possible share of the consumer's building dollar, regardless of whether their material or service is necessary or in proper keeping with the type of home that the consumer can afford to buy. The general idea is to sell him everything that can possibly be hung on his little home, induce someone to finance it, and let the financing agency hold the bag. . . . Do you remember crawling over the floor joists and roof rafters of the new house being built in your block when you were a boy? Watch a home being constructed today. Aside from the use of a power saw by some of the more advanced builders, is there any difference in the method of construction?

"No practical art has made less progress through the ages than home building. We still use the same brick hand unit employed in building the walls of Jericho. . . . There have been attempts in experimentation and research by some individual manufacturers, and, in some instances, by groups of manufacturers. The results range from "The House of Tomorrow" (demonstrated at A Century of Progress in Chicago) to "The Cotton House" consisting of two room units, weighing 370 pounds and costing $220. . . . The general purpose of these experiments has been to reduce costs, but to my knowledge few, if any, have accomplished this purpose. . . . Those who are experimenting with pre-fabricated houses are, in most cases, departing from the conventional designs, but the home buyers are not ready to depart materially from the conventional. They still want a brick exterior, in an English, a Colonial, or some other current design.

"The big demand of the consuming public is for homes constructed of as nearly indestructable materials as is practicable. This naturally means minerals and their by-products. . . . To sell homes today, adequate financing must be provided. Interest rates must be reduced. Financing charges must be made commensurate with the service performed. Building materials must be produced in larger units to reduce high-

[Please turn to Col. 2, Page 51]

BUILDING BEAUTY INTO HIGHWAY DRAINAGE STRUCTURES

by
R. T. REINHARDT

WHILE grade and alignment are still of first importance to highway engineers and builders, the trend is toward creating highways of beauty as well as utility. Bridges and other waterways are designed to blend with the surrundings instead of making discordant notes in the landscape.

All forms of construction materials are being adapted to this purpose. Steel, iron, concrete and occasionally wood are used to obtain the most pleasing as well as utilitarian effects. It is worthy of note that those types of construction best fitted from the standpoint of strength, are usually also the most attractive to the eye. This is one of the lessons of experience.

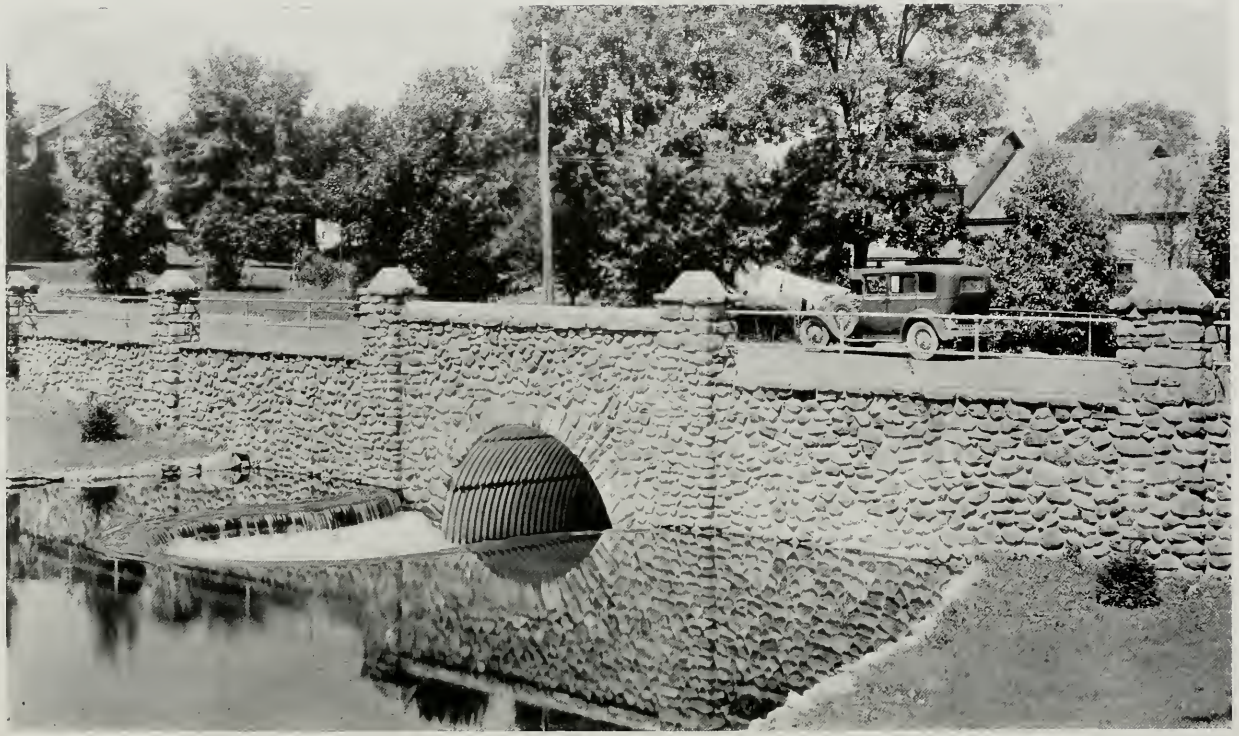
Since the dawn of history man has probably used everything from a sturdy swing vine to the modern suspension bridge to cross streams, but perhaps the natural bridge shown in the first photo is unique. The trusses are formed by four trees, two growing on each side of the bank with their tops united and the floor suspended from them. While this structure can not be classed with beautiful bridges, it seems at least worthy of attention because of its picturesque quality. Resourceful natives of Java were the successful engineers.

A PICTURESQUE "NATURAL" BRIDGE IN JAVA. The tops of four trees, two growing on each bank, were joined to form the truss.

To design structures which provide ample strength as well as beauty is not so difficult as some existing examples would indicate. It is only recently that our American engineers have become conscious of the esthetic possibilities in much of their work.

In practically all new highway structures of importance is the evidence that somewhere along the line, someone had the factor of beauty prominently in mind. The accompanying photographs show types of waterways, which, while not examples of the most beautiful to be found, are typical of the classes represented.

Excellent examples of the type of concrete bridges which span many of the gorges over which California highways cross, are pictured in some of



MULTI PLATE ARCH BRIDGE, 15-FOOT SPAN, ON STATE HIGHWAY, MONROE TOWNSHIP, NEW YORK

A FOREST GLADE IN BUTTE COUNTY, CALIFORNIA, INTO WHICH THE METAL ARCH AND RUBBLE HEADWALL HARMONIZE WELL

A FULL-ROUND, 105-INCH DIAMETER DRAINAGE Way made of heavy corrugated plates bolted together in the field. The rubble headwall of native stone presents a pleasing appearance.

the photographs. Single arches are employed in these structures to provide strength as well as beauty.

It is the smaller and more frequent type of drainage way that is likely to be the most unattractive. Either rough timber causeways, or bridges or concrete boxes, frequently despoil an otherwise beautiful vista. Often these structures are so narrow as to reduce the width of the road and are provided with timber guards ostensibly to protect motorists but usually so frail as to give only a false sense of security.

True, these small drainage ways are frequently built in the cheapest form possible because of their large number. However, experienced highway engineers and maintenance men are rapidly realizing the error of considering only first cost when planning new drainage ways or replace-

A CONCRETE SPAN IN THE HIGH SIERRAS,

constructed with a view to harmony of appearance with its surroundings as well as ample strength.

THE CALIFORNIA STATE HIGHWAY DEPARTMENT

has used considerable care to preserve the natural beauty of the country through which its roads pass. This graceful bridge is an example of skill and foresight.

SHARON WOODS PARK, OHIO, installed this attractive structure of multi plate and rubble masonry to harmonize with the beauty of the setting.

ments. They are also finding that these structures can be just as readily and economically constructed for the full width of the road for practically the same cost as older forms and still afford considerably more in the way of attractiveness.

Perhaps the most pleasing to the eye of all forms of waterways is the natural stone arch, or series of arches. However, this type of construction is, usually, out of the question for public works because of its cost. A recent development for medium and large drainage ways is rapidly winning favor of both engineers and architects and others interested in beautiful highways, because of its adaptability in this respect. This structure, known as Multi Plate, is made of heavy plates of deeply corrugated iron bolted together in the field and usually provided with attractive headwalls of native stone..

This drainage way can be made either in the full round or in the arch form as the pictured installations indicate. Occasionally a series or battery of similar arches is necessary to provide sufficient waterway. In this type of situation the possibilities for esthetic results are great. Arches of various sizes may be employed or they may all be of the same diameter. One of the plates shows an installation of this material in which one large and two smaller arches were employed to provide for a wide stream. Single arch installations are also shown.

This matter of attractive drainage ways, both large and small, is certain to demand more and more attention of those responsible for their building. It is no longer true that "anything which will carry the traffic on the road, and the water under the road, will do."

The West has scenery, perhaps unsurpassed anywhere in the world; let us not mar it more than necessary in our efforts to open it to motorists.

THIS IS ANOTHER VIEW OF THE STATE HIGHWAY BRIDGE shown on the opposite page. The bridge is located on the Coast highway, between Monterey and San Simeon. Great strength is developed by this type of structure.

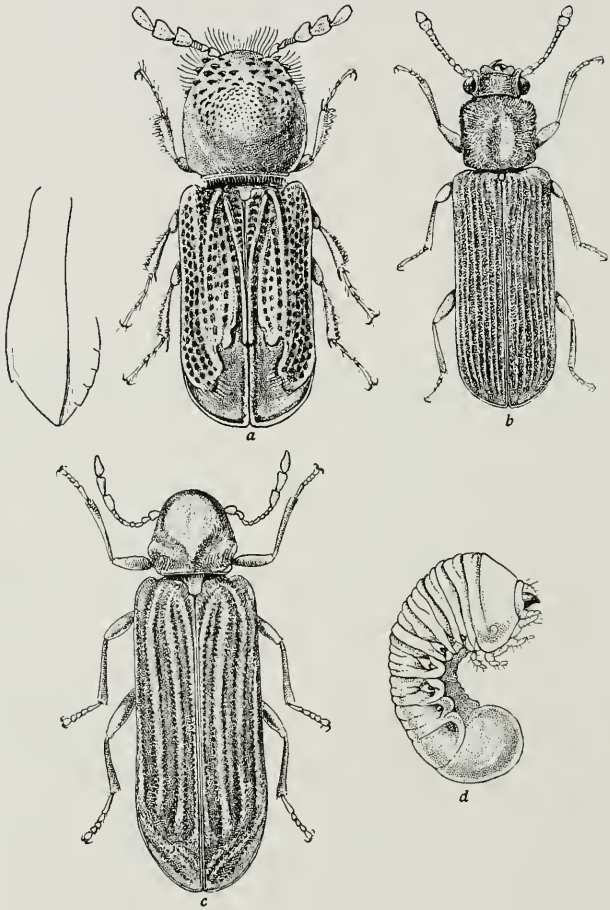


Fig. 1—Beetles commonly found in California. a—Scobicia declivis, the lead cable borer. b—Lyctus cavicollis, the common true powder-post beetle in California. c—Hadrobregenus gibbicollis, the most destructive native California death watch. d—Larva of Polycaon stonti, one of the Bostrichidæ. All much enlarged.

TERMITES AND TERMITE CONTROL

by
A. A. BROWN, Consulting Engineer

THE close resemblance between the destructive work of termites and that done by other forms of wood-eating insects often leads to false conclusions and consequently the application of wrong methods of eradication or control. Economical and practical methods of preventing termite attack upon wood and its products must be based upon a knowledge of the habits and life histories of the particular types of termites causing the damage and, in some instances, even of the particular species. The accompanying letter is typical of many requests for information. In this case the damage is being caused by the powder-post bettle, Fig. 1b, and not Fig. 2. These beetles rival the termites in their ability to destroy seasoned wood products; consequently a more complete discussion of this phase of the problem, it is felt, may benefit readers of THE ARCHITECT AND ENGINEER.

A COMPLAINT FROM LA CRESCENTA

"Less than two years ago, I built a new stucco house here in La Crescenta, California, and today I found an insect boring "neat holes in my polished oak floors." I caught him in the act! and put him in a bath of alcohol. I enclose his carcass in this letter.

"I have circular No. 318, August, 1930, from our agricultural experiment station and have read what it gives on termites. I think I recognize this animal—though I never saw a termite before. He bored several 'neat holes' not far from each other in the board and left a pile of fine sawdust near (or about each hole. They were all open and not 'closed up' as the circular says he does—mebby I got him before he had time to close the places. He is working in different parts of the house—thus far now. The house was built expressly to guard against termites, or I thought it was. The foundations are cement—with inches of space below all mud sills—before the dirt is reached. The whole space under the house throughout is open from 3 feet to 10 feet for basement, and ventilating windows (small ones) in the foundation at base of walls of house. Fresh air and sunshine circulate nearly always.

"There was not a chip of wood, not even a bit of sawdust, left under this house. It was more than broom clean. The cracks in the floor between boards are sealed tight—so no insect can get in between boards.

"This oak floor is put on over pine boards—and floors are therefore double. Basement always dry and ventilated.

"We are nearly 2000 feet elevation in a soil of decomposed granite all over this country, 14 miles north of Los Angeles, and boulders and rocks of all descriptions from 20 tons down to the size of gravel. Why do I have termites? I presume this bug is a termite and what shall I do about it to get rid of the creatures and stay rid of them?

"There are other sorts of termites—all around us eating off posts we put in beside

of trees and shrubs. In a year they are eaten off at the ground. I shall appreciate an early reply for which I shall sincerely thank you."

Powder-Post Beetles

Termites are not the only wood-eating insects. The carpenter ants and powder-post beetles work in such a manner that the damage is often mistaken for that done by termites. Dr. Edwin C. Van Dyke* says: "In the forests, as soon as a tree dies or is injured it is attacked by a host of insects of various types which soon consume a large part of it, leaving the remainder to decompose through the agency of the various fungi and molds. Such insects are the scavengers of the forest.

The first insects to attack the timber itself are the bark beetles or engraver beetles. These are small beetles which burrow through the bark and then, partly by themselves and partly through the activities of their larvæ, excavate channels of various designs between the bark and the sapwood. Following these are the true borers, the wood-boring caterpillars, and larvæ of several types of beetles, which, hatching from eggs deposited in cracks of the bark or wood, bore either beneath the bark or directly into the wood itself.

"When the timber has dried out or cured to a considerable degree, the carpenter ants, termites, carpenter bees, and powder-post beetles appear and, when the wood commences to mold, are followed by other types of scavengers. Most of these insects remain in the forest and carry on their activities there. Those which continue to attack the wood after it has been converted into lumber or utilized by man are more limited in number. The most important of these are the termites. Others which attack lumber or other wood products are an occasional wood-boring beetle, the carpenter bees, carpenter ants, and powder-post beetles. Concerning the first, the wood-boring beetles, there are but few cases reported except in log houses made of logs with the bark still attached. The large carpenter bees sometimes become annoying by drilling out holes for their nests in posts or even in portions of buildings."

The insects which are included under the heading of powder-post beetles are of three types, belonging to three closely related families, having somewhat similar life histories. They get their common name from the fact that their larvæ reduce the wood to a condition of powder. This is the undigested portion of their diet. At times woodwork may be so completely honeycombed or pulverized by these insects that it will break down under the least stress. The beetles, as well as their work, are somewhat distinctive.

Of the Death Watches, Fig. 1c, Professor Van Dyke says: "The adult beetles bore into the rafters and other structures of old buildings, as well as into old furniture, and lay their eggs in well protected niches. The larvæ, similar to that in Fig. 1d, soon hatch and commence to burrow, and in the course of a year or so reach maturity and transform into adult beetles. These beetles breed in the same structure generation after generation, sometimes for hundreds of years, with the result that the timbers ultimately become completely honeycombed and of course sooner or later give way. This is the cause of the collapse of many parts of old buildings. Westminster Abbey and several of the most famous of English cathedrals, as well as many on the continent of Europe, are now being overhauled as a result of the ravages of these beetles."

Figure 1c shows one of the best known California species and at the left in Fig. 3

* Professor of Entomology, University of California, contributed a chapter entitled "Wood-boring Insects Whose Appearance or Workings Resemble Those of Termites" to the final report of the Termite Investigation Committee, University of California Press.

will be seen an illustration of their work in a piece of Douglas fir taken from an infested timber in a Berkeley home. The illustration at the right shows the result of their work in an old branch. Note the completeness of the honeycombing and the fecal pellets in the burrows, a picture simulating very closely that produced by termites, Fig. 4a. We have long known that death watches were destructive, both in Europe and Asia, but not until recently was it found that some of our native species were becoming injurious. The Old World species mainly attack oak and other hardwoods, while the most injurious of our species attacks, so far as known, only the Douglas fir.

"Death Watch," Wierd Pest Name

The common name of death watch was given to these insects years ago by the superstitious who, hearing their tappings in their burrows at the dead of night, interpreted it as a sign that some member of their household, perhaps the sick patient that they were attending, would soon die.

Of the beetles in the family Bostrichidæ Dr. Van Dyke says: "They are usually much more elongated, and as a rule much larger, some species being an inch or more in length. These beetles always prefer well seasoned wood, and in most cases confine their activities to the sapwood. Because of the fact that they almost entirely confine their attention to the wood of broad-leaved trees, the householder is but rarely bothered by them. A large dining room in a mountain resort in southern California, built of alder logs, was badly attacked by one of the larger species (Fig. 1d) a subcylindrical black beetle, a half inch or more in length. The same special has been found in the San Francisco Bay region, as well as in the southern part of the State, attacking the stored products in hardwood warehouses. So far, it has been most destructive to the panels from which desks and other articles of furniture are made. The larvæ, Fig. 1d, burrow serpentine channels in the basswood or other soft wood serving as the inner layer of the panels, and, soon after the wood has been made into furniture, transform into adults. These then burrow straight out through the mahogany or oak veneer. The common species, however, work mainly in such wood as oak. The lead cable borer breeds freely in oak, Fig. 1a, California laurel, and similar woods. This beetle has a peculiar habit of attacking lead cables and similar articles while under the stimulation of hot weather. The beetles bore through the lead to the inner lining, and thus cause a considerable loss of power when the cables later become wet.

Powder-Post Beetle Very Small

The true powder-post beetle is small, averaging less than one-fifth of an inch in length, Fig. 1b. These insects breed in the wood of a great number of broad-leaved trees, but have a preference for the hardwoods like ash, hickory, and oak. The in-

Fig. 2—The common damp-wood termite.

festation in wood generally takes place while the timber is being seasoned, especially in the yards of warehouses of the hardwood lumber companies.

These beetles breed like the death watches, generation after generation in the same timber, finally reducing most of the interior to a pulverized condition, as shown in the oak flooring, Fig. 5. The adults mature in spring or early summer and eat their way to liberty, producing by so doing the characteristic shot holes seen in the

Fig. 3—At left is a piece of Douglas fir taken from a Berkeley, California, home infested by Hadrobregenus gibbicollis fig. 1-c. At the right shows the result of these beetles' work in an old branch. Note the completeness of the honeycombing and the focal pellets in the burrows, closely resembling the work of termites fig. 3-a.

left half of Fig. 5. In most cases, after mating the females go back into the same wood, or they may enter and start a colony in new lumber. As the boring is done almost entirely by the larvæ or grubs, and in the interior of the lumber, the presence of these insects may not, as also in the case of termites, be known until the woodwork breaks down and exposes the interior. When one notices the shot holes in any article made of oak, ash, or hickory he should investigate.

Fig. 5—Work of a typical powder-post bettle, fig. 1-b, in oak flooring. Left, surface showing adult emergence holes. Right, work of larvae exposed by removing surface layer. When these typical "shot" holes appear on the surface of any article made of oak, ash, hickory, or mahogany, it would be well to investigate.

The powder-post beetles are very destructive and, after the termites, are the most injurious of all insects to seasoned wood products. They infest to a great extent the ash timbers which go into shipbuilding and wagon making, also the hickory which furnishes the handles of axes, spades, etc., and the oak which goes into floorings, trim, and furniture. The hickory furniture is one of California's world-famous vacation resorts is now being subjected to severe attacks by these beetles.

As previously stated, the infestation usually takes place while the timber is being seasoned, especially in the yards of warehouses of the hardwood lumber companies. The practice of storing new lumber in warehouses near lumber which has remained in storage for a considerable period of time should be discouraged. New kiln dried lumber free from borer infestation should be stored in specially provided space, proof against infestation. The added cost of providing storage constructed of pressure treated lumber should not prove burdensome to lumber yards and would afford much greater security to the user. Such storage space can be constructed using rough timbers pressure treated with crude creosote and the exposed flooring and lining treated with the refined creosote from which the black color and oiliness have been removed.

Prevention is most important. When damage is discovered in woodwork as shown in Fig. 5 the infested portion of the wood should be removed, destroyed, and replaced with sound material. Where the damage is not so serious as to destroy its usefulness, a thorough swabbing with a transparent penetrating creosote repeated at intervals, if signs of activity are noted. will usually eliminate attacks. Kerosene can be used for this purpose but it lacks the penetrating qualities of the creosote and leaves the surface of the wood oily. Valuable articles, such as furniture, may be treated with hydrocyanide gas, preferably in retorts where a vacuum can be produced before the gas is allowed to enter. The use of pressure treated wood will prevent damage by any of the wood destroying insects.

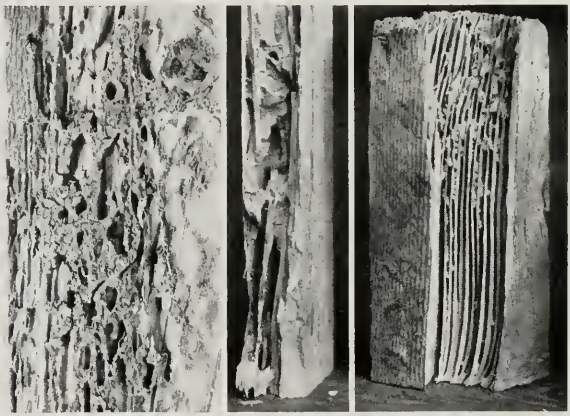


Fig. 4—Workings of the ground dwelling termites. All show the earthy frass characteristic of the subterranean termites. Note the similarity in appearance to the work of the powder-post beetle, fig. 2, at right.

Engineering
and
Building Construction

FOUR AIRPLANES CIRCLE ABOVE THE STEADILY RISING COLUMNS OF TOWER 2 OF THE SAN FRANCISCO-OAKLAND BAY BRIDGE WHICH, IN THIS PICTURE, WERE APPROXIMATELY 200 FEET HIGH.

THE FOUR AIRPLANES CAN BE SEEN DIRECTLY OVER THE TOWER.

THE MAXIMUM DISTANCE BETWEEN THESE TWO TOWER SHAFTS IS 66 FEET AT THE BASE. MARKET STREET, SAN FRANCISCO'S MAIN ARTERY, IS 76 FEET WIDE.

BAY BRIDGE IS TWENTY PER CENT COMPLETED

WITH twelve million dollars of the approximate total construction cost of sixty million dollars expended to date, the San Francisco-Oakland Bay Bridge may be said to be one-fifth, or twenty per cent, completed.

Of the fifty-one land and subaqueous piers, twenty have been placed in construction, of which nine are finished.

The completed piers are Pier 2 on the San Francisco shore line, upon which a tower has now been raised to 200 feet above the water, and eight piers in the East Bay crossing, some alongside the Key Route Mole, and two between the end of the Key Route Mole and Yerba Buena Island.

During this month the bridge passed the 200,000 cubic yard mark in its concrete pour.

BIBRD'S-EYE VIEW OF THE CONCRETE CENTER ANCHORAGE PIER

This view of Pier 4, midway between San Francisco and Yerba Buena Island, was taken from the top of a derrick boom. The cellular concrete block contains 55 steel cylinder cells which extend from top to bottom of the concrete structure. Each cylinder is 15 feet in diameter. The concrete pier is now standing with its bottom 186 feet below.

The dimensions of the pier are 197 feet long by 92 feet wide and, when completed, will be a concrete monolith 490 feet high from its bottom, resting on bedrock, to its top, 300 feet above water.

It was also during the past month that the San Francisco-Oakland Bay Bridge broke the world's record in sinking pier caissons deeper than concrete has heretofore been placed below water.

Pier W-3 is now standing with its cutting edge at the bottom, 210 feet below water, the previous records being 176½ feet, the depth of a pier of the Atchafalaya River Bridge at Morgan City, Louisiana, and Piers E-4 and E-5 of the San Francisco-Oakland Bay Bridge, both of which are now completed and resting on hard pan at 180 feet below low water.

"Devil's" Pier is Completed

During this same month the most difficult pier of the San Francisco-Oakland Bay Bridge was sealed to rock and practically completed,

BRIDGE TOWER AT SUNSET
A photograph taken from this point on San Francisco Bay in 1937 would show San Francisco framed beneath the gigantic structure of the San Francisco-Oakland Bay Bridge, the most western tower of which is rising to huge proportions at the left.

save for finishing off its top. This pier is W-6, 1160 feet west of Yerba Buena Island, the most difficult of the piers because water at this point of the bay is 107 feet deep, which made sinking this huge floating foundation a precarious operation.

It was this pier which, while standing in the 107 feet of water with its bottom only 35 feet into the mud, tipped suddenly farther than was calculated by engineers and required many weeks to be brought back to position.

Six months were needed to construct this pier from the time its caisson was floated to site.

Progress on Yerba Buena Island is moving along at satisfactory rates, and the two tunnels, into which the cables will be anchored, have been excavated to full size, and the concrete lining of their arched roofs is soon to be placed.

General progress on the bridge is considerably ahead of schedule and, while no official announcement has been made, it is safe to say that the bridge is six months ahead of schedule.

STATE ARCHITECT CLARIFIES NEW EARTHQUAKE LAW

by
GEO. B. McDOUGALL

ARCHITECTS and engineers in private practice as well as members of the staff of the Division of Architecture are becoming continually more familiar with the characteristics of the new law, Chapter 59, Statutes of the year 1933, and the details of its administration.

The fundamental purpose of the Act is to make school buildings safe; in other words, to provide for sound school building design and construction as required for the protection of life and property. The additional construction cost in such design and construction in connection with an entirely new building as compared with the cost of construction leaving seismic forces out of consideration, is small. Also, in cases of existing buildings which were well built originally, safety can be secured by reconstruction work of comparatively small cost, in some cases less than 5% of the original construction cost. There are other cases of reconstruction of existing buildings, however, in which securing safety will involve expenditure for reconstruction of as much as 30 to 40 per cent of the original construction cost. Therefore the specially serious financial problems which confront school authorities as a result of the passage of this law, Chapter 59-1933, arise in connection with this last mentioned class of existing unsafe buildings.

RESPONSIBILITY OF SCHOOL AUTHORITIES

There are those who have the feeling that this Act has greatly increased the responsibilities of school authorities. This apparently is erroneous. The school authorities have no more responsibility now than they had before the Long Beach earthquake of March 10, 1933. These authorities have always been legally responsible for the safety of the school children, the governing Sections of the School Code involved speaking generally, being Sections 2.801 and 2.802, and Act 5819 of Deering's General Laws 1931 Edition, taken together with the written opinion of the Attorney General given to Mr. Vierling Kersey, Director of Education, under date of November 22, 1933.

The Division of Architecture as required by the Act has made rules and regulations which are available in printed form to all those desiring copies of them. The Act itself has been referred to as having been hastily passed by the Legislature under stress of hysteria following the Long Beach earthquake, and the Division's rules and regulations have been referred to as being too stringent. In this connection attention is called to the fact that while there may

EDITOR'S NOTE—Summary of a paper read by the State Architect, at a meeting of the Structural Engineers Association of Northern California, held at the Engineers' Club, San Francisco, Tues., March 13.

have been hysteria following the Long Beach earthquake, the Act and the rules and regulations which have been made as a means of administering it, were thoroughly and very carefully considered and based upon labors and researches of experts which extended through several years of time. These rules and regulations provide minimum not maximum requirements.

There are those who believe that there are certain locations in the State where serious earthquakes will not occur and that this law which is general and applies to the whole State, is too drastic with respect to such areas. Those who hold this view overlook the fact with reference to existing buildings that the Act makes dealing with such existing buildings wholly optional with school authorities having jurisdiction over them. If these authorities are convinced that the particular area in which they are located is not subject to earthquake they are at liberty so far as this Act is concerned, to take no action regarding existing buildings in such area, such decision being made entirely on their own responsibility. If they are in doubt on this point as to the likelihood of earthquake in their particular locality there are numerous seismologists whom they can employ to give expert opinion.

Quake Hazard General in State

In this connection a report on earthquake hazard and earthquake protection was published in printed form in June, 1933, by the Joint Technical Committee on Earthquake Protection known as the Millikan Committee and organized soon after the earthquake of March 10th, 1933. This report makes it very clear that earthquake hazard exists over practically the entire area of this State. Also in this connection Dr. J. P. Buwalda of the faculty of the California Institute of Technology, a member of the Joint Technical Committee on Earthquake Protection, and Chairman of the Division of Geology and Paleontology, has written to Mr. Vierling Kersey, State Superintendent of Public Instruction, under date of January 11th, 1934. Dr. Buwalda's letter takes the form of a very comprehensive and quite lengthy statement and makes it entirely clear that earthquake hazard instead of being absent in localities at a distance from fault lines, has been definitely shown to exist over practically the entire area of the State, and that severe shock on a distant fault may shake down a school building just as violently as a lighter shock on a nearby fault. Dr. Buwalda's observations are based on seismological researches which are being carried on at an expense of about $50,000.00 a year.

On this point it is important to note that if it should be thought necessary to give consideration to the suggestion that intensities of stress due to earthquake forces vary as between different areas in the State, then any suggested modifications of the Code of the Division of Architecture would have to be in the direction of increased stringency, since this Code as it now stands is not too stringent for any area throughout the entire State.

Insofar as the Division of Architecture has considered that safety of design and construction as affected by lateral forces involves also reasonable safety from panic caused by fire or otherwise, the uniform code of the California Building Officials Conference of 1927 and as latest amended, is being used.

As to fire safety in connection with a new building, the Act, Chapter 59-1933, is mandatory in requiring reasonable fire safety as such safety is interpreted by the Division of Architecture, for the reason that safety from earthquake forces involves also reasonable fire safety since fire in a building is frequently directly associated with earthquake. Furthermore, the phrase

"Safety of Design and Construction" used in the Act, as interpreted by the Division of Architecture, involves reasonable fire safety as well as structural safety.

In a case where a school authority desires to reconstruct, alter or add to an existing single unit school building and makes proper application for approval of plans and specifications which cover only such reconstruction, alteration or addition to such building, the Division of Architecture upon receipt of application will make examination of the entire building.

In case only the portion of the building proposed to be reconstructed, altered or added to is found to be unsafe and the plans and specifications accompanying the application provide for strengthening such portion in accordance with its rules and regulations, the Division will approve such plans and specifications and upon completion of the work in accordance with them will issue its written certificate that the building is safe and meets the requirements of Chapter 59-1933.

If, however, on examination by the Division any other remaining portion or portions of the building is/or are found to be unsafe, then in that case such portion of the building as it is proposed to reconstruct, alter or add to, may be reconstructed altered or added to, provided that the entire section of such portion of the building which it is proposed to reconstruct, alter or add to, from foundation to roof both inclusive, shall be brought up to the requirements of the rules and the regulations of the Division of Architecture.

In such a case, however, the Division of Architecture will decline when the work as shown by such plans and specifications is complete, to give its certificate of approval of the building as being safe and will advise the school authority that a portion of the building is unsafe and that the use of the building as a whole for school purposes will be entirely on the responsibility of the school authority and without the approval of the Division of Architecture until such later time as the school authority completes the strengthening of the remainder of the building in accordance with the provisions of Chapter 59-1933 and the rules and regulations of the Division made under it.

Small Buildings Outside the Law

In the matter of small buildings such as garages to house school busses and to be erected on school grounds, if such small buildings are not to be used by either students or teachers, and the particular school authority will pass a resolution declaring that such small buildings are not to be used for school purposes and prohibiting their use by students or teachers and will furnish the Division of Architecture a copy of such resolution certified to by its clerk or secretary, such small buildings will not be considered as school buildings as defined in the Act and will therefore not be subject to its provisions.

There may be cases where a particular school authority finds it can quickly and advantageously bring into agreement with the requirements of the Act an existing building or buildings, and decides to do so in order to avoid the expense involved in constructing temporary wood and canvas buildings for class or other school functions. In such cases if the Architect or Engineer in charge of the work for the school authority can demonstrate to the satisfaction of the Division of Architecture that it is practicable to convey the necessary information as to the comparatively minor alterations or additions required, by means of brief written specifications and simple sketch drawings, the Division will interpret such brief specifications and sketch drawings as constituting plans and specifications as required by the Act.

Where a particular school authority desires to make changes in an existing building which will cost in excess of $1,000.00 and which are non-structural, application together with plans and specifications and necessary filing fee must be submitted to the Division of Architecture, and if after making such examination as it deems necessary, the Division agrees that the proposed changes are non-structural, the school authority will be notified that it may proceed with the project, in accordance with the plans and specifications and subject to all the requirements covering work on an existing building involving structural changes which have already been outlined.

Reasonable Fire Safety

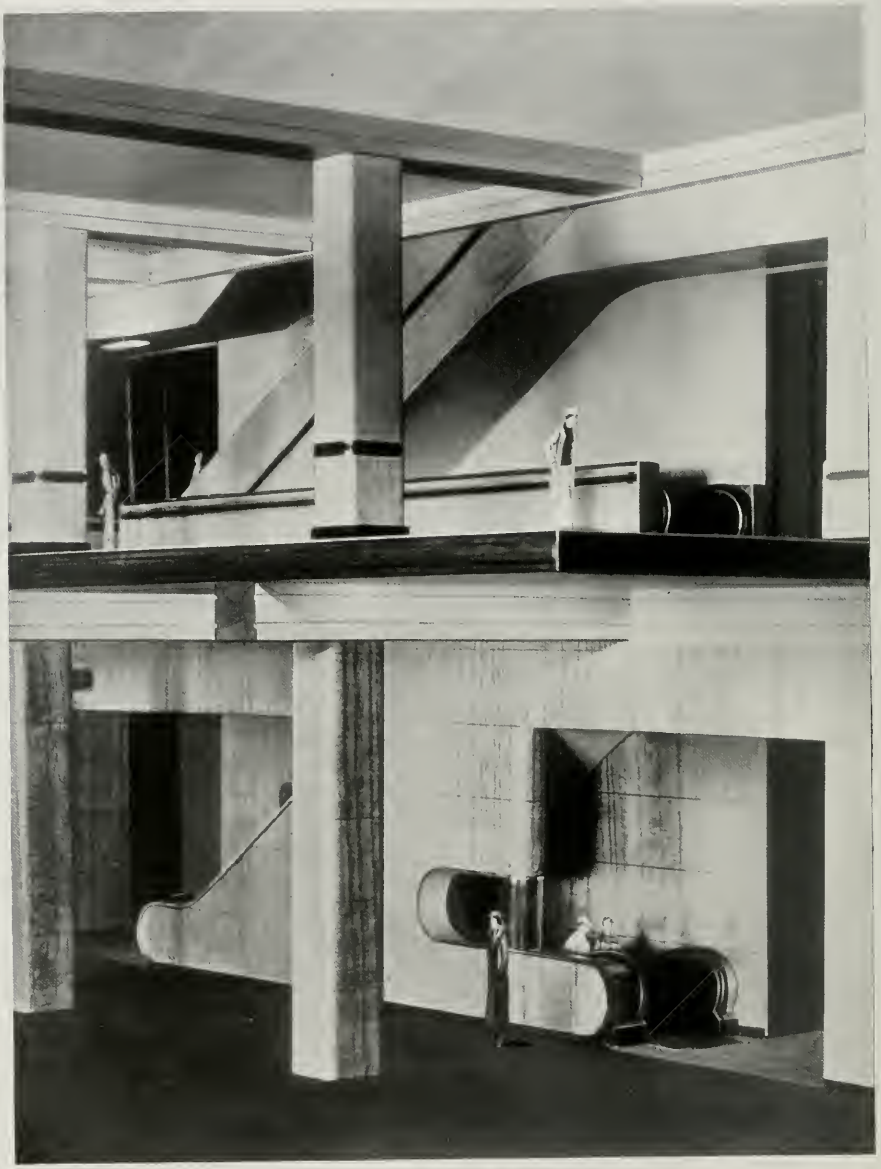
In the matter of reasonable fire safety affecting new classroom buildings such classroom buildings may be of wood frame construction provided this is not contrary to local ordinances and provided such buildings are not more than two stories high and the foundation and the walls under the first floor are of masonry. In such a case no use is to be made of any space under the first floor except for heater equipment; the heater room is to be entirely separated from the remainder of the building by masonry construction and is to be accessible only from the outside of the building. If in such a building it is desired to provide a basement for play space in inclement weather or other such use, this may be done provided the first floor is of reinforced concrete construction and all heater room space has an absolute separation of masonry from the remainder of the building and is accessible only from the outside of the building. In such a case egress from the building itself must be at the first floor level which level at the entrance or entrances must not be more than 5′ above the finished exterior grade; no stair may be continuous through the basement and the first story, and egress from the basement itself to the outside of the building must be provided to avoid the necessity of using stairs to the first story.

As to the values, if any, for resisting earthquake forces to be allowed for roof, floor and partition structures including lath and plaster, such values must be established by tests satisfactory to the Division of Architecture and the allowance, if any, by the Division of such values will be determined in each particular case if and when request for authority to use such values is made.

DEMAND FOR BETTER AND CHEAPER HOMES

[Concluded from Page 32]

priced skilled labor at the site. New processes must be developed so that more permanent and lasting materials can be incorporated into the home at prices within reach of the average buyer. Sales practices must be changed to reduce duplication of sales effort and eliminate over-selling. These things are all necessary to reduce the cost of home-building. . . . It is not difficult to enumerate what should be done, but to state it is not to accomplish the task. It is a big order, an enormous undertaking. The research and experimentation needed to show the way will have to be carried on by unbiased scientists who are interested, not in profit, but in the problems to be solved. Such research requires money, but who is to furnish it? The financier desires only his interest and the return of his principal. The builder, the contractor, and the real estate broker are financially unable to help. The retail material dealer is interested only in selling. There remains only the producer of materials and equipment. From the standpoint of logic it is his job."



MODEL SHOWING THE OTIS STREAMLINE ESCALATORS AS THEY WILL LOOK ON THE UPPER AND LOWER FLOOR

IMPROVED DESIGN FOR DEPARTMENT STORE ESCALATORS

COMBINING beauty with practicability, the latest in department store escalators is attracting interest in the East, particularly among department store executives.

For many years the escalator, or moving stairway as it is sometimes called, had been considered only as a mechanism for carrying crowds. With the advent of modern merchandising methods it has been found that for department store use especially the escalator has some other very important features, among them the ability to induce circulation. In other words, if the average customer in a store without escalators visits two floors, with escalators he will usually stop and shop on four or more. This fact, combined with the knowledge that merchandise attractively displayed can create sales, has brought about a renewed interest in the subject of escalators.

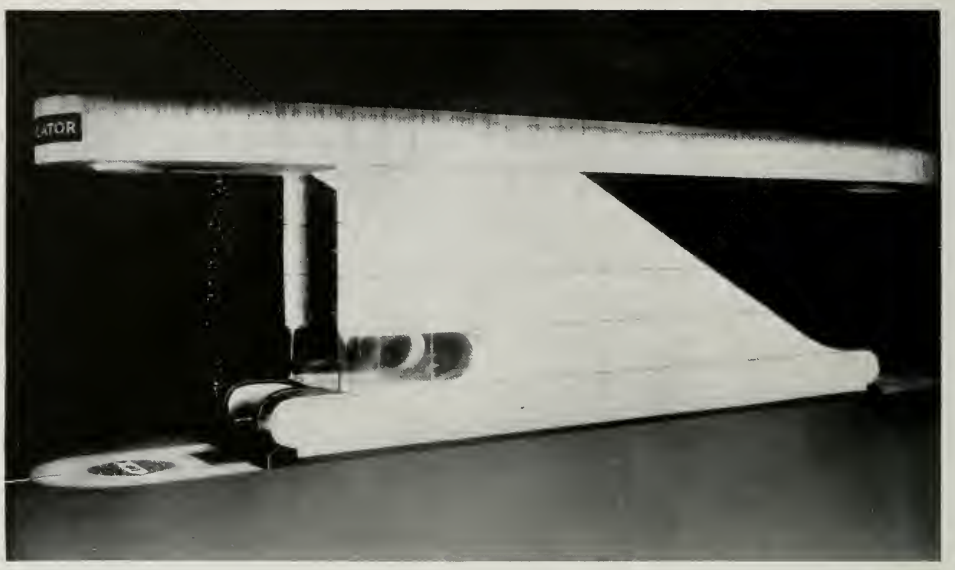
Despite all the engineering improvements which have made the escalator very efficient and almost noiseless, many stores still objected to escalators because it was difficult to harmonize them with modern interiors. To overcome this objection, the Otis Elevator Company enlisted the aid of the industrial designer. After considerable study not only of the mechanical features, but also of the merchandising possibilities of the escalator, several designs were created.

One of these designs, and typical of the modern trend, not only produces a clean cut, flowing modern effect which expresses the function of the escalator, but also incorporates some interesting new features.

The front of the canopy which encloses the mechanism for the escalator on the floor above, is utilized to form a directional sign visible from all parts of the store. On the sides of the canopy moving messages may be used to call attention to special sales — or the announcement of new merchandise. A strong light on the underside of the canopy throws a pool of light on each of the landings. It not only has the psychological effect of drawing people to the escalator but also facilitating their movement on and off of it. Illuminated arrows and directional signs on the floors of each landing help to direct traffic. Especially valuable from a merchandising viewpoint are the small display cases built into the sides of the escalator and so located that the contents must be seen by every customer.

The transformation of the escalator is another illustration of the assistance which the designer is

ENTRANCE TO THE NEW OTIS STREAMLINE ESCALATORS, SHOWING THE BUILT-IN DISPLAY CASES



SIDE VIEW OF THE NEW OTIS STREAMLINE ESCALATORS

bringing to industry and of the increasing importance of appearance in hitherto purely mechanical products.

A large new department store in which all of the vertical transportation provided for the public's use will be by escalator, is now under construction in Chicago. This store, which will contain five floors, including a basement, with provision made for the addition of three more stories later, is being built by Sears, Roebuck & Company at Sixty-third and Halsted Streets, and will be known as the Sears, Roebuck & Company Becker-Ryan Store.

VISIT STEEL PLANT

More than 100 architects and engineers were the guests of the Soule Steel Company on two different occasions recently. Following a buffet lunch, the visitors inspected the essembling of forms for a group of dormitory buildings at Stanford University. Four of the structures will have light weight arc welded steel frames. Commenting on the fire, earthquake and termite proof features of the all steel buildings, Edward L. Soule predicted that within a short time this type of construction will become generally accepted throughout the country.

A complete description of the structures will be published in an early issue of THE ARCHITECT AND ENGINEER.

COLLEGE BUILDING ADDITION

George W. Kelham, 315 Montgomery Street, San Francisco, is completing plans for a wing addition to the chemistry building at the University of California at Los Angeles. It will be a three-story and basement structure; steel frame, reinforced concrete and brick walls, concrete floors and stairs, brick exterior, terra cotta tile roof, ornamental terra cotta, steel windows, metal furring and lathing, dampproofing, marble and tile work, hollow metal doors, slate black-boards, ventilating, high and low pressure steam and return piping, etc. Cost of the addition and equipment will total about $300,000. H. J. Brunnier, Sharon Building, San Francisco, is structural engineer and Hunter & Hudson, San Francisco, mechanical engineers.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126.00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Duraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 80c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)
Common, $40.00 per M.
Common O.P. select, $42.00 per M (average.)

1x6 No. 3—Form Lumber	$28.00 per M
1x4 No. 1 flooring VG	56.00 per M
1x4 No. 2 flooring	50.00 per M
1x4 No. 3 flooring	38.00 per M
1x6 No. 2 flooring	52.00 per M
1¼x4 and 6 No. 2 flooring	61.00 per M

Slash grain—

1x4 No. 2 flooring	$46.00 per M
1x4 No. 3 flooring	43.00 per M
No. 1 common run T. & G.	42.00 per M
Lath	6.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple			$120.00 M ft.
1 1-16x2¼" T & G Maple			132.00 M ft.
⅞x3½ sq. edge Maple			140.00 M ft.
	13-16x2¼" T&G	⅞x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel. 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.30
2 coats, lime mortar hard finish, wood lath	.60
2 coats, hard wall plaster, wood lath	.55
3 coats, metal lath and plaster	1.20
Keene cement on metal lath	1.25
Ceilings with ¾ hot roll channels metal lath	.70
Ceilings with ¾ hot roll channels metal lath plastered	1.40
Shingle partition ¾ channel lath 1 side	.70
Single partition ¾ channel lath 2 sides 2 inches thick	2.70
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	2.60

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.40
3 coats Medusa finish No. 18 gauge wire mesh	1.75

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.60 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place

Store Fronts—
Copper sash bars for store fronts corner, center and around sides will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

CLOSE UP OF MARIN TOWER, GOLDEN BRIDGE

OUT WHERE THE BRIDGE BEGINS

by
CHESTER P. NINEKIRK

TODAY, a gigantic superstructure rises from the North promontory of that projecting strip of land which gradually slopes from the elevation of Tamalpais to protect from tempest winds and pounding surf, one of the greatest harbors in the world—San Francisco Bay. And while this great monolith of steel reaches toward the sky, men, like tiny ants are moving about. Here they swing from thread-like cables; there on the very top they work and sweat as a mammoth truss is deftly swung into place accompanied by the deafening staccato of riveting hammers.

Tower of Steel

Under the influence and setting of this giant project, the achievements of man become real and a new appreciation touches our very soul as the struggle to bridge the Golden Gate doggedly continues.

* *

Steel workers and painters climb about the projecting steel, unmindful of the heights. As we look at them a whistle blows; metallic clatter ceases and the men descend to earth again. As they step from the platforms we scrutinize them carefully, but to our surprise there is nothing unusual in their outer appearance. We find them real men, realists—who like to work with tools; men who delight in seeing the efforts of their physical skill grow before their ever watchful eyes. They leave it for others to plan and dream.

In their mental make-up we do find some differences. They are those who have conquered that certain psychological limitation known as fear, from which most humans suffer when unduly exposed in mid air on high elevations—one of the idiosyncrasies of the human mentality.

* *

It is interesting to note that a man who would almost welcome a situation wherein he must fight his weight in boa constrictors, might be the very individual who would suffer with quivering knees and shaking jitters while watching the builders of bridges.

* *

These are but a few of the small incidents of human character that go into the melting pot of human aggressiveness—just some of the insatiable traits that stimulate man's desire to overcome the great natural barriers that hinder his progress, —and it matters not whether his desire is to build a gigantic bridge, or cut a trail through a virgin jungle infested with reptiles; his spirit faileth him not.

ARCHITECTS AND PRODUCERS' COUNCIL VISIT PLANT OF COLUMBIA STEEL COMPANY, PITTSBURG. PHOTO TAKEN IN FRONT OF HOTEL AFTER LUNCH

« « « « With the Architects » » » »

ARCHITECTS VISIT STEEL PLANT

Members of the Producers' Council Club of Northern California affiliated with the American Institute of Architects, were given the coveted opportunity of a conducted tour through the Pittsburg plant of the Columbia Steel Company on Wednesday, April 18. Practically every department of the plant was in operation, so that members of the party were enabled to watch the actual making of various steel products from the melting of the pig iron to the final testing of the finished article before shipment.

The group visiting the plant numbered over 120, including a representative group of the Bay Region's most prominent architects, several engineers of note, representatives of the Columbia Steel Company, and others. Guests included A. J. Evers, president of the Northern California Chapter of the American Institute of Architects, and H. M. Michelsen, A.I.A. representative to the Producers' Council.

Ben F. Blair, president of the Producers' Council Club, extended greetings to the group gathered at a luncheon which followed the tour of the plant. Dr. G. L. Von Planck of the Columbia Steel Company gave an interesting talk on the metallurgical problems of steel manufacture, speaking particularly of the high quality of workmanship demanded by the Columbia Steel Company in the manufacture of steel sheets and tin plate to produce a product that will meet the severe demands of later forming and fabricating. Dr. Von Planck also dealt at some length with the rust-resisting properties of copper bearing steel.

It was universally agreed that the trip not only added to the store of knowledge of the many guests, but also contributed materially to their fund of good fellowship.

ENGINEERS GIVE TALKS

Two construction projects of interest were discussed at the May 2 meeting of the North Oakland Development Association. "Bay Bridge Approaches and Other Arterial Problems" was the subject of an informal talk by Walter Frickstad, city engineer of Oakland, while Wallace Boggs, chief engineer of the Broadway low-level tunnel, spoke on "The Tunnel Construction and Approaches."

ELLIS F. LAWRENCE HONORED

Tribute to Ellis F. Lawrence, architect of Portland, for his splendid work in promoting building construction during the months of depression, was paid by the Oregon Building Congress following the discharge of the Work Promotion Committee on March 20. Special recognition of 16 months of unremitting labor was expressed in a resolution presented to the guest of honor by F. H. Murphy, president of the congress. The resolution reads:

"Resolved, that the board of directors, on behalf of the Oregon Building Congress express herewith its sincere appreciation of the invaluable service Ellis F. Lawrence has rendered through its entire history, and in particular through his labors with the Work Promotion Committee, his devotion to the best interests of the building construction industry, his insistence upon adherence to sound business practices in the crafts and professional branches of the industry, and the maintenance of high professional ideals and a fairness of spirit in his dealings with all others, which have characterized his efforts throughout, and be it further

"Resolved, that these resolutions be entered on the records of the Oregon Building Congress, and that a copy, suitably embossed be furnished Mr. Lawrence.

"James J. Sayer, Ray Becker, and George W. Herron, chairmen."

Ellis Lawrence is senior member of Lawrence, Holford and Allyn, and dean of the school of architecture of fine arts, University of Oregon, Eugene.

Abbott Lawrence, son of the honor guest, gave an interesting account of his recent European sojourn devoted both to study and business.

EASTBAY ENGINEERS CLUB

Carl Jansen, superintendent of Bridge Builders, Inc., was principal speaker at the April meeting of the Eastbay Engineers Club, Oakland. His subject was "Problems in Building the Eastbay Piers of the San Francisco-Oakland Bay Bridge."

Resignation of Colonel H. C. Boyden as secretary of the club was announced by Harold Farnsworth Gray, president, who said G. J. Cummings had been appointed to fill the vacancy.

TO REMODEL HOTEL

Plans have been prepared by A. R. Denke for extensive remodeling and refurnishing of the eight story Argonaut Hotel on 4th Street, between Market and Mission Streets, San Francisco. The building is owned by the Society of California Pioneers. About $100,000 will be expended on the improvements.

BROADWAY TUNNEL, OAKLAND

Bids are to be submitted this month for the general construction of the Broadway Low Level Tunnel, a project involving $3,750,000 and partially financed from Federal funds. Plans for the various structures in connection with the project were prepared by Wallace B. Boggs, 1448 Webster Street, Oakland.

DORMITORY FOR JESUIT ORDER

The Jesuit Order of Divinity Students will have a new dormitory at their retreat in the Los Gatos foothills. Plans for the $40,000 building are being prepared in the office of Edward A. Eames, architect, 353 Sacramento Street, San Francisco.

DEVELOPING HILLSIDE PROPERTIES

Hillside properties in Berkeley are being developed auspiciously by the owners. Several houses already have been built and others are planned. W. A. Netherby has a contract for building a $6000 home for the Hillside Properties Company.

BERKELEY FIRE HOUSE

Preliminary drawings have been made by Hardman & Russ, architects, for a Spanish style firehouse to be built at the corner of Yolo Street and The Alameda, Berkeley. It is believed construction will go forward some time this summer.

RESIDENCE ALTERATIONS

Bakewell & Weihe, 251 Kearny Street, San Francisco, have completed drawings for alterations to the house at 74 Twenty-fifth Avenue, North, San Francisco, the property of Martin J. Dinkelspeil.

PALO ALTO SCHOOL CHANGES

Extensive structural changes to the Palo Alto Union High School group are to be made from plans by Birge M. Clark, architect, and W. L. Heuber, structural engineer. A bond issue for $110,000 has been approved.

HILLSBOROUGH RESIDENCE

Willis Polk & Company, 277 Pine Street, San Francisco, has completed plans for a stucco residence in Hillsborough for W. P. Byrnes. Bids have been taken from a selected list of contractors.

HONOR FOR SAN FRANCISCO BOYS

Two members of the San Francisco Architectural Club have just won Harvard University scholarships. They are Noel O'Connor, in the office of Arthur Brown, Jr., and Chris Runge, formerly in the office of H. A. Minton. As if this were not sufficient honor for San Francisco, a third member of the club, E. T. deMartini, qualified as alternate in the event Ruge or O'Connor cannot take the scholarships. And Harvard University commented that this year's work was the best presentation in ten years. The subject was: "A Residence for an Ambassador," and required the contestants to make a design with all plans and details within six days. The scholarships are valued at $1,000 each.

NEW THEATERS PLANNED

There have lately developed considerable activity in theater construction.

The T & D Enterprises will erect a two story reinforced concrete moving picture house in Susanville, and a one story reinforced concrete theater at Redding. They will cost $40,000 and $120,000 respectively. L. H. Nishkian of San Francisco, is the structural engineer.

A type B theater is being designed for Alameda County, by F. Frederic Amandes, 1879-18th Avenue, San Francisco. The playhouse will seat 1000 persons and cost $70,000. It will be used both for moving pictures and legitimate plays.

Mr. Amandes has also made plans for extensive alterations to the Fox-Virginia theater in Vallejo.

OFFICE FOR LAND BANK

The eight story loft building at 15th and Clay Streets, Oakland, formerly occupied by the Breuner Furniture Store, has been leased by the Government and will be occupied as an office building by the Federal Land Bank. Rearrangement of the various floors and fitting up of suitable office quarters, is in the hands of James W. Plachek, architect, Mercantile Trust Building, Berkeley.

ALBERT F. ROLLER BUSY

Recent work in the office of Albert F. Roller, architect, Crocker First National Bank Building, San Francisco, includes a Manuel Arts Building for the Woodrow Wilson Grammar School at Daly City, and alterations to the Lyons-Magnus factory at 16th and Alabama Streets, San Francisco. Mr. Roller is also preparing working drawings for a new postoffice building at Redding.

PIEDMONT PINES HOME

A $5500 home is to be built in Piedmont Pines, Oakland, by Earl V. Hildreth, from plans by W. R. Yelland, architect, Financial Center Building, Oakland.

PERSONAL

Alban A. Shay, A.I.A., recently resumed downtown activity in Seattle by opening an architectural office at 406 Aurora Avenue.

Carl F. Gould, of Bebb and Gould, Seattle, and his family, returned Monday, April 16, from a two-weeks trip to California. Mr. Gould was recently elected vice-president of the Pacific-Northwest Academy of Arts, Seattle.

Julius A. Zittel, retired Spokane architect, has presented his architectural library to the department of architectural engineering, State College of Washington. Mr. Zittel served several years as Washington state architectural examiner.

J. C. Bebb, son of Charles H. Bebb, senior member of Bebb and Gould, Seattle architectural firm, has been re-elected treasurer of the Construction League of America.

Four architecture students at the University of Washington, Robert L. Durham, James Joseph Chiarelli, Elmer Leonard Omdal and Yoshio Iwanga, were chosen pledges to Tau Sigma Delta, national architectural professional fraternity, at the April meeting.

CHICAGO ARCHITECTS IGNORED

Geo. Wallace Carr writes the editor of Illinois Society of Architects Monthly Bulletin as follows:

The Art Institute of Chicago has invited two Chicago architects and five New York architects to compete for designs for the proposed additions to their building, and the architects of Chicago may well ask themselves why this is so.

Are there only two architects in Chicago competent to undertake this commission? Are all of the older men, excepting those chosen, too old and doddering, dry witless old duffers, only waiting for the sexton and parson to end a career long since closed? Are our younger men too green and impulsive, too lacking in experience and wisdom to be trusted? The answer to these questions is clearly "No" on every count.

The situation appears to me to be so extraordinary that comment is compelled. The money to be spent probably comes principally from Chicago, and unless there are better reasons than appear on the surface, should be spent in Chicago.

I am told the architects invited are:

James Russell Pope	Bennett, Parsons & Frost
Delano and Aldrich	Holabird & Root
Paul Cret	Raymond Hood
	Hyram Walker

RESIGNS STATE BOARD OFFICE

Henry H. Gutterson recently tendered his resignation as a member of the California State Board of Architecture, Northern Division. No explanation for his resignation has been announced. Governor Rolph appointed Charles F. B. Roeth of Oakland as Mr. Gutterson's successor.

PERRY HEADS STATE BOARD

Warren C. Perry, head of the School of Architecture, University of California, Berkeley, has been elected president of the State Board of Architectural Examiners, succeeding Henry H. Gutterson, San Francisco, who had been president since shortly after the first of the year when Albert J. Evers resigned.

Mr. Gutterson had been a member of the board since 1930.

Officers and members of the two boards are:

Northern District — Warren C. Perry, president; C. J. Ryland, secretary; Chas. F. B. Roeth, H. Meyer and Harry J. Devine.

Southern District—Louis J. Gill, president; A. M. Edelman, secretary; Harold C. Chambers, Harold E. Burkett, C. Stanley Wilson.

Mr. Edelman is secretary of the state board, succeeding Mr. Ryland.

OREGON REGISTERED ARCHITECTS

Registered architects of Oregon at a meeting held April 4 in Portland, elected Francis Jacobberger general chairman, and Mrs. F. A. Fritsch secretary-treasurer. Mr. Jacobberger is to name four society members to serve with himself on the board of directors. Lea MacPike was made chairman of a committe to study a school rebuilding program, to be financed with the aid of Federal funds. The session, attended by 35 architects and draftsmen, voted to continue membership in the Federated Professional Societies of Oregon.

Forty-two architects are registered for professional practice in Idaho, according to an official list issued by Emmett Pfost, commissioner of law enforcement.

LOS ANGELES COMPETITION

An architectural competition for the best designs for a mountain cabin with 900 sq. ft. floor area was recently conducted by the Architects Building Material Exhibit, Los Angeles. The competition was open to all Southern California certificated architects. Three cash prizes will be given by the Hammond Lumber Company to the winners as follows: First prize, $125; second prize, $50, and third prize, $25. The jury: Summer Spaulding, Gordon B. Kaufmann and H. Roy Kelley; Mrs. Walter F. Malone, and Miss M. L. Schmidt.

MRS. HARLAN THOMAS

Mrs. Edith Thomas, wife of Harlan Thomas and mother of Donald Thomas, Seattle architects, passed away the third week in March shortly after returning with her husband from a two months' sojourn in California.

NEW OFFICE, SALES BUILDING AND SHOP OF SCOTT-BUTTNER ELECTRIC COMPANY, OAKLAND, CALIFORNIA

SCOTT-BUTTNER ELECTRIC COMPANY OCCUPIES NEW HOME

SCOTT-BUTTNER Electric Company, one of the oldest established firms in the Bay area, recently demonstrated its understanding of the rapidly changing channels of trade by making a major venture in its plan of operation.

Realizing that the swing of merchandising of small electrical appliances is towards the chain and department stores, the Scott-Buttner Electric Co., has now made the store a minor activity. The company has enlarged its electrical contracting facilities and organized and equipped its shop to handle machine and motor repairs. This plan included the moving to a larger factory type building at 23rd and Webster Streets, Oakland. The building is a two story reinforced concrete structure and provides drive-in facilities for the handling of heavy motors and materials. There is a full second floor which accommodates a motor repair shop, refrigeration service department and stockroom. The first floor front includes a small store with space for the display of motor equipment, fans and refrigeration equipment. The rear includes the garage and heavy storage space.

In March the Kenyon Electric Company, another pioneer East Bay electrical firm, was merged into the Scott-Buttner Electric Co. This merger has given added strength to the company through increased facilities, experienced personnel and a good will built up through years of excellent service rendered.

The Oakland plant is managed by E. L. Buttner, an engineering graduate of the University of California in 1920 with fourteen years of practical contracting and installation experience. The Scott-Buttner Electric Co. operates a second shop in San Francisco at 34 Harriet Street. The San Francisco office is managed by R. W. Griffin, another California engineering gradate, class of 1921.

Among some of the firm's outstanding installations are the Oakland Airport, Grove Street Pier, new Key System Pier, and most recently, the complete electrical installation in the Marshall Steel plant.

Chapter and Club Meetings

NORTHERN CALIFORNIA CHAPTER

"University Night" was observed when Northern California Chapter, A.I.A., met at the University of California at Berkeley, the evening of April 24.

The delightful and out-of-ordinary program which was arranged by Professor Howard Moise, first brought the members together at the University Art Museum to view the Albert Bender collection of Chinese art; thence, to the home of Professor Moise on Panoramic Way for a social hour; next, to the Faculty Club for dinner and business session; and, later, to the Architecture Building, University of California.

Guests of the evening were Michael Goodman, Stafford Jory and A. Torossian of the School of Architecture faculty.

With Albert J. Evers, president, in the chair, the following business was transacted:

The minutes of the previous meeting were approved as read.

The report of the exhibit committee that the customary Honor Award Exhibit be postponed until a more opportune time was approved and so ordered.

The membership committee reported active progress in its drive to obtain new members.

Mr. Evers reported the forwarding of information to the Institute relative to possible construction in Northern California which might be benefitted by Federal appropriation as provided for in the pending La Follette Bill S. 3348. A motion followed and was carried empowering the board of directors to endorse, in behalf of the Chapter, this or other bills which provide benefits to architects through promotion of public works.

The public information committee reported that a proposal has been made by private promoters to conduct a Home Exposition in which the Chapter has been requested to participate. Mr. Roeth stated that, in his understanding, various material firms would be called upon for financial assistance in this enterprise. Stating that he is opposed to Chapter participation in any private enterprise which will impose a financial load on such firms, he moved that the motion be tabled. Seconded, the motion was carried.

Mr. Evers announced the recent appointment of Mr. Roeth to the State Board of Architectural Examiners. In response, Mr. Roeth stated that "University Night" was looked upon by him as the outstanding Chapter event of the year, particularly the present occasion toward which Professor Moise had contributed so largely to its success. Continuing, he spoke of the active part which the Construction League of California is taking in the Code and other matters, which are of vital interest to the architects.

Mr. Evers announced the probable continuance of relief organization work and emphasized the value of the relief which had come to many architects and draftsmen through the agency of the Historic American Building Survey. In view of the possible continuance of the Survey in some form, it was moved and uanimousely carried that the Chapter renew endorsement of it and approve Irving F. Morrow as district officer.

The following were elected delegates to the Sixty-sixth convention of the Institute to be held in Washington, D. C., May 16, 17, 18:

Chester H. Miller, G. Frederic Ashley, Wm. C. Hays and John J. Donovan.

In keeping with the usual custom, the rest of the Institute members of the Chapter were elected as alternates.

As information rather than instruction to delegates, it was voted the sense of the meeting to approve proposed amendments to the Institute By-Laws which relate to dues and initiation fees.

There being no further business, Warren C. Perry, director of the School of Architecture, expressed the pleasure that is felt by the teachers and students in this yearly trip to the campus and welcomed the members to the Architecture Building to vie wthe student work. —J.H.M.

* * *

SOUTHERN CALIFORNIA CHAPTER

Various Chapter activities were reported upon at the regular monthly meeting of Southern California Chapter, American Institute of Architects, held in the Richfield Building, Los Angeles, April 10.

Henry Carlton Newton, chairman of the structural and mechanical engineers' committee of the Chapter's structural service relations division, presented a preliminary report on engineering fees. Pending receipt of revised figures from the mechanical engineers, no action was taken on the report.

Committee on membership reported the receipt of six applications for membership. The applications were referred to the executive committee.

H. Roy Kelley, at the request of the editor of Better Homes and Gardens, presented a cash prize to Mr. Brown who won first place in the class C division of a competition recently conducted by the magazine. The award was made for results obtained in remodeling a residence at 751 North Hampton Ave.

Following the Chapter meeting, at which President Summer Spaulding presided, the members joined the State Association of California Architects at dinner.

Ralph C. Flewelling, vice-president of the Chapter, opened the joint meeting and introduced Chester H. Miller of Oakland, president of the State Association. Mr. Miller reported on the semi-annual meeting of the northern and southern sections executive boards, held in Los Angeles, April 9, at which time it was decided to appoint legislative committees to start the preparation of a legislative program.

H. C. Chambers announced that the State Association would hold a convention this year in the southern section of the state. The meeting will be held early in October, the exact dates to be announced later.

Prof. Graham A. Laing of the California Institute of Technology was the speaker of the evening.

MILLIONS FOR HOME CONSTRUCTION

Mobilization of all units of the state's vast building industry in support of legislation providing millions of dollars in Federal funds for construction of new homes is in progress, according to information from Sacramento.

Measures now pending before congress would provide $500,000,000 in government money for direct loans to individuals to finance the purchase of land and building of single or two family dwellings, or the remodeling of existing homes.

Asserting that the plan would "probably be the greatest single move in the recovery program." Glen V. Slater, assistant state registrar of contractors, pointed out that thousands of California contractors and building craftsmen, now idle, would obtain employment under the proposal.

The proposal is similar in scope to the California veterans home purchase plan, which has been successfully operated for 12 years without costing taxpayers a single penny and for which bonds totaling $50,000,000 have been voted. State fiscal officers unofficially estimated that California might receive a like amount in the event the half-billion dollar home building bill is enacted.

"Adoption of a nation-wide program of this character would, unquestionably, have a far reaching effect toward the restoration of normal trade conditions throughout the nation and particularly in California," said Slater.

"Chief among the benefits to be derived from the measure would be the complete revival of the state's second largest industry,—the building and construction business which embraces many trade professional groups. Our economic ills have been due, to a large extent, to the almost complete cessation of building activity in recent years.

"Tens of millions of man-hours of labor would be provided for unemployed contractors and craftsmen. It would enable this large group of men to again earn their livelihood, an inherent privilege which they have been denied in recent years through no fault of their own.

"I am heartily in favor of the program, and believe that every faction within the real estate, building and construction groups should unite in presenting the economic importance of this measure squarely before their congressman and enlisting their support.

"There is considerable need for new homes in virtually every California community and passage of the measure would off-set this condition. Adequate finances must be provided, however. It is an established fact that 65 per cent of the money expended will flow directly into the pockets of the contractors and craftsmen."

Under the program loans may be made from the $500,000,000 fund directly to individuals seeking to acquire a home of their own. The money would be re-payable over a long period of years at a nominal interest rate. Loans for new home projects would be limited to $20,000 and must not exceed 75 per cent of the value of the project. Only single and two family dwellings would be eligible for Federal aid. In addition, loans up to $3,500 or 60 per cent of market value of the property may be made for remodeling of existing homes.

HISTORICAL AMERICAN BUILDING SURVEY

Work of the Northern California District, recently completed under the direction of Irving F. Morrow, will be presented in Portfolio form commencing with the June issue of THE ARCHITECT AND ENGINEER, and continuing until the most interesting features of the survey have been illustrated. Photos and measured drawings will be shown. The series will start with Mission San Juan with explanatory notes by Mr. Morrow.

BUILDING PERMITS FOR APRIL

Los Angeles again maintained leadership among the Pacific Coast cities reporting largest volume of building permits in April, according to the Western Monthly Building Survey prepared by H. R. Baker & Co. San Francisco ranked second and was followed by Portland, Beverly Hills, Oakland, Seattle and Sacramento. The volume of permits in April declined considerably below March and April of last year. The total for April 1934 was $3,754,975 compared with $4,417,170 in March 1934 and $4,312,155 in April 1933.

Total volume of building permits for the seventy-six Pacific Coast cities reporting in April amounted to $4,248,609 against $4,814,871 in the same month last year.

Thirteen cities reported increase in building permits in April over March, and seventeen reported increase in April over the corresponding month last year.

	April 1934	March 1934	April 1933
Los Angeles, Cal.	$1,129,630	$1,340,402	$1,189,926
San Francisco, Cal.	496,321	680,403	538,112
Portland, Ore.	236,310	302,435	144,475
Beverly Hills, Cal.	179,500	287,500	286,310
Oakland, Cal.	177,631	366,823	127,729
Seattle, Wash.	173,250	119,955	120,155
Sacramento, Cal.	153,714	120,327	78,037
Vancouver, B.C.	143,380	131,350	100,870
Stockton, Cal.	136,825	33,543	16,999
Long Beach, Cal.	110,449	223,470	1,072,605
Pasadena, Cal.	101,379	44,564	46,941
Fresno, Cal.	94,051	90,719	64,362
Glendale, Cal.	93,915	57,535	67,060
San Jose, Cal.	72,230	100,590	65,675
Berkeley, Cal.	61,205	65,167	42,797
Salt Lake City, Utah	48,742	39,757	90,620
Burbank, Cal.	48,587	21,837	19,700
Santa Barbara, Cal.	46,777	18,256	20,530
Vernon, Cal.	41,500	45,982	17,925
Santa Ana, Cal.	39,778	22,933	65,688
Santa Monica, Cal.	37,650	105,860	75,755
Bakersfield, Cal.	34,360	32,972	13,615
Ontario, Cal.	34,243	4,370	490
Modesto, Cal.	31,848	32,020	5,679
Palo Alto, Cal.	31,700	128,400	40,100
Totals	$3,754,975	$4,417,170	$4,312,155

WILL AWARD TWO $100 PRIZES

The prize of one hundred dollars for the best design, offered by the Koh-I-Noor Pencil Company in their box design contest, was awarded to Edmond J. Ryan, architect, of Chateaugay, N. Y.

Although only one prize was offered, so many excellent solutions were entered that the judges are now choosing a second design, for which $100 will be given. The winner of this prize will be announced shortly.

CERTIFIED ADEQUATE RED SEAL STANDARD WIRING

Dear Mr. Architect:

Many landlords have overlooked one important factor in attracting and holding tenants for commercial buildings. They have not provided suitable or adequate lights.

Workers tire more quickly, their work is less accurate; and waste, spoilage, lowered production creep in, when lights glare or are too dim.

Many tenants recognize these factors, and even if they do not, they readily see advantages of good lighting when they are shown. It makes a useful sales point for lessors.

Since the arrangement of space, the placing of lights and electric facilities come under your jurisdiction both in new structures and remodeled ones, we take the liberty of pointing out this opportunity you have of rendering a service to your clients. We realize that you already subscribe to the idea of adequate lighting and urge it upon the principals you are serving. But we want to aid you in any way possible. Would actual figures on the value of good light help you to convince clients?

Cordially yours,

Pacific Coast Electrical Bureau

447 SUTTER ST., SAN FRANCISCO

(DEPARTMENT J-5)

N. B. Are you interested in the recent sensational developments in lighting? We have retained Mr. Clark Baker, an authority in this field, to act as travelling consultant to architects. If you wish Mr. Baker to call at your office for a discussion of modern lighting, communicate with the Bureau offices. No obligation.

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PRIVATE ARCHITECTS WILL DESIGN FEDERAL BUILDINGS

Private architects will design Federal buildings costing more than $60,000 each, according to an announcement by the American Institute of Architects following a conference of Institute representatives with officials of the Treasury Department. Structures in the smaller communities involving less than this amount will be planned by government architects.

Louis La Beaume of St. Louis, chairman of the Institute's Committee on Public Works, declared in a progress report that the long struggle of the Institute to win recognition for outside architects has resulted in the adoption of a new general policy favorable to the architectural profession. Appointments of architects for certain projects under the Federal building program are expected soon.

"The representatives of the Institute heartily endorsed the Government's policies with regard to simplification of design and economies of construction," the report said. "They reaffirmed, however, the obligation of the Government in the encouragement of good architecture, however simple or however practical the proposed projects might be."

Treasury officials will submit an outline of proposals regarding fees, standards of architectural types, and other matters for the Institute to study, it was decided at a conference between Rear Admiral C. J. Peoples, director of the new Federal Procurement Division, W. E. Reynolds, assistant director, L. A. Simon, supervising architect, and Frank C. Baldwin, secretary of the American Institute of Architects, E. C. Kemper, executive secretary of the Institute, and Mr. La Beaume.

"Admiral Peoples states his general agreement with the principle which the architectural profession has endorsed regarding the employment of architects outside of the Public Works Bureau," Mr. La Beaume reported. "Mr. Reynolds asserted that the Bureau had been very seriously considering the policy of employing architects outside the Procurement Division with respect to certain Federal buildings. He added, however, and Admiral Peoples confirmed his statement, that in the smaller units involving contracts below $60,000 the Bureau was inclined to prepare the designs, plans, and specifications.

"The representatives of the Government did not take issue with the arguments of the profession with regard to the direct advantages to be expected from the employment of competent architects outside of the Bureau of Public Works.

"The greater part of the discussion related itself to terms of employment, character of service and responsibility, and the basis of proper remu-

neration. As spokesman for the Bureau, Mr. Reynolds stated his belief that the system of computing the architect's fee should be improved. He expressed the thought that the fee should not be computed on a percentage basis, either in justice to the Government or to the architect, and advocated a fixed fee to be agreed upon, which fee should be properly related to the size and complexity of the project. He indicated that this subject was engaging the attention of the Bureau, and that he had not yet come to any definite conclusions.

"Mr. Reynolds elaborated his ideas with regard to the architect's remuneration by stating that the Department had received many complaints from structural and mechanical engineers, charging that some architects were refusing them fair compensation for adequate engineering service. These complaining engineers stated that they could not possibly render adequate service for the fees allowed them by the architects.

"Mr. Reynolds pointed out that the Government would insist on competent and adequate engineering service in connection with all of its projects.

"The representatives of the Institute suggested that the matter lay within the power of the Government to remedy, inasmuch as the Government might insert in its contract with the designing architect the rate of compensation to be paid to engineers associated with him.

"It is gratifying to state that at the conference Admiral Peoples expressed his agreement with the principle which the Institue has long endorsed regarding the employment of private architects outside of the Bureau, and resident in the general localities of the post office buildings to be erected. Mr. Reynolds and Mr. Simon concurred with this general statement of policy.

"Mr. Reynolds stated that as a result of the questionnaire sent out by the Treasury Department last summer, he was in possession of full and satisfactory data regarding the qualifications of architects in every part of the United States. He stated that certain projects would be released and that certain appointments were expected to be announced at an early date."

PRIVATE MAUSOLEUM

B. J. S. Cahill of Oakland and Alameda has completed plans for a marble and concrete private mausoleum in Cypress Lawn Cemetery, San Mateo County, to cost $45,000. The entire exterior will be of white marble. Mr. Cahill has also prepared plans for alteration work at the Cypress Lawn catacombs and mausoleum, at an estimated cost of $20,000.

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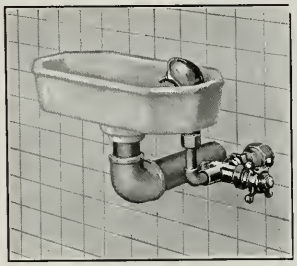

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PACIFIC PORTLAND BUYS STANDARD GYPSUM PLANTS

Pacific Portland Cement Company has taken over the plants and operation of the Standard Gypsum Company, manufacturers of gypsum plaster, Seattle, Long Beach and Ludwig, Nevada. Operations will be combined under the Plaster Division of Pacific Portland Cement Company with Martin Uldall, former president of Standard Gypsum in charge.

"This forward step is taken," said J. A. McCarthy, vice-president and general manager of the Pacific Portland Cement Company, "in the firm belief that business is definitely on the upswing.

"Cement shipments for the United States for the first quarter showed an increase of 36.9 per cent over last year. In California the increase was 80 per cent, mostly due of course, to concentrated shipments on large projects such as Boulder Dam, Panama Canal and the bridges. Nothing, in our opinion, can stimulate the increase in employment and purchasing power like the resumption of building and remodeling, and we look for increasing activity in both the cities and the rural districts."

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Pacific Portland Cement Company will now own and control eight cement and plaster mills, located at strategic points on water and rail, including Seattle, San Francisco and Long Beach. These mills are located in populous centers where track shipments are an important factor in distribution. The Redwood City plant on San Francisco Bay, has within a radius of 30 miles, 65 per cent of the population of Northern California. Other plants are located at San Juan, in the heart of the Santa Clara and Salinas Valleys; Plaster City, in the Imperial Valley, and Ludwig and Carlach in Nevada. In addition, distribution facilities are maintained at Portland, San Diego, Sacramento, Stockton and the Hawaiian Islands.

With its facilities thus augmented, Pacific Portland Cament Company is in a commanding position for the manufacture and distribution of basic building materials in eleven western States as well as for the export trade.

CONTRACTOR MUST CONTROL HIS OWN WORK, COURT RULES

AN independent contractor is one who, exercising an independent employment, contracts to do a piece of work according to his own methods and without being subject to control of his employer except as to the result of the work.

These statements were contained in the opinion of the Second District Court of Appeal, Division 2, California, denying a rehearing of the case of Chapman vs. Edwards Bros., et al., in which judgment had been awarded against the defendants in the Superior Court of Los Angeles county for $15,000 damages on account of the death of Charles Jesse Chapman, a laborer who was killed by a truck owned and operated by John Klein, employed by Edwards Bros. to haul dirt from the excavation for the Richfield Oil Company building. Being made a party to the suit Edwards Bros. set up the defense that Klein was an independent contractor and therefore they were not responsible. Text of the Appellate Court's opinion, which is of interest to all contractors and employers, follows:

PARKER, Justice pro tem.

This was an action to recover damages as a result of the death of one Charles Jesse Chapman. The action was against L. E. Edwards and C. A. Edwards as copartners doing business under the firm name and style of Edwards Bros. and against one John Klein as an individual. The cause of action was based upon the theory that the death of Chapman was caused by the negligence of the defendants. This brief statement will suffice as a general statement, inasmuch as the sole point to be considered does not require further detail.

After trial by jury, a verdict was returned in favor of plaintiff and against all defendants in the sum of $15,000. A new trial having been denied, judgment followed pursuant to the verdict. Defendants Edwards, who will hereinafter be referred to as Edwards Bros., or Brothers, appeal. No question is presented on the question of the negligence of defendant Klein, nor is there any point made as to the amount of damages awarded. It is not contended that the court erred in any respect, whether in rulings on the admission of evidence or in instructing the jury. It is apparently conceded that defendant Klein was guilty of negligence proximately causing the death of Chapman. The sole point urged is that Edwards Brothers are in no wise responsible for the negligence of Klein for the urged reason that at all of the times surrounding the happening of the unfortunate event Klein was an independent contractor. We may here narrate the facts as to the relationship of Klein and Edwards Brothers. The last named were contractors engaged under contract to do the excavating preparatory to the construction of a large building in the city of Los Angeles. The excavating contract involved the performance of much work and labor, calling for the use of much equipment and many men and trucks. Klein, as far as the record indicates, was an individual owning a truck. We phrase thusly to negative the idea that Klein was engaged in the trucking business, with men and equipment. As far as indicated, Klein owned a truck and obtained employment for himself and this one truck whenever and wherever work was available. After Edwards Bros. entered upon the excavation, it became desirable to move the dirt faster. Thereupon the office girl of Edwards Bros.

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telephoned to Klein and inquired if he was then working. When informed that he was not working, she told him he could go to work on the job of Edwards Bros. That was all of the conversation, and forms the basis of the arrangement between Edwards Bros. and Klein. The girl had authority to thus phone Klein, but had no authority further than to tell him to report for work. The excavation was being done by means of a shovel, steam or gas, which lifted the dirt and dropped the same into trucks, which trucks thereafter removed the dirt from the premises. Accordingly, Klein reported with his truck. He had worked for or been engaged by Edwards Bros. before, and, being familiar with the work, required no general instructions. He just pulled his truck under the shovel, obtained his load, and drove away. The foreman told him his compensation would be $1.75 per load. Within a few days thereafter Edwards Bros. voluntarily and arbitrarily raised the price per load to $2. The reason given for the raising of the price per load appears as follows: "If I remember rightly we could see that they were not going to make their wages; and so, rather than have them dissatisfied, I think, we raised it to $2.00." As stated, there were a number of trucks used on the job. All but one or two, out of a possible dozen, were operated by Edwards Bros. Klein reported for work at the same time as the other trucks each day and all trucking ceased when the shovel stopped; the obvious reason for this being that, when the shovel was idle, there was no dirt to haul. The shovel and its operation was under the control of Edwards Bros., whose foreman directed its movements as far as placement was concerned. The one person on the job who directed the work of the trucks was a foreman called Adolph. It was stipulated that Adolph was in charge; that he directed where he wanted the steam shovel to work and moved it from place to place and directed the trucks to come under it when they were ready to load—in other words, the trucks were acting, in the loading, under his direction. Adolph had control over all of the trucks, hired, rented, or owned, to the extent of telling them when he wanted to have them loaded. He would tell them to get in their place; but most of the time they just ran automatically. As the testimony went, "they had sense enough to see for themselves what to do." Adolph, the foreman, would always tell Klein when it was his last load at night. Klein was paid each month for his work, computed according to the loads hauled. According to the testimony of Edwards, he was hired for the job, if he wanted it; it was up to himself whether he wanted to stay or not—that is, his truck was hired.

There is no further need of detailing the situation. In the discussion of appellants' claim there may be from time to time statements of fact which will, in each instance, be deemed to reflect the record, unless otherwise noted.

[1-3] An independent contractor is one who, exercising an independent employment, contracts to do a piece of work according to his own methods and without being subject to the control of his employer except as to the result of the work. 14 R. C. L., p. 67. Like many other definitions, this statement serves as a generality. However, as a working definition, this has been generally accepted, with occasional additions. The books abound in applications of the term, and it will be found that, as in many other instances, the question whether or not one is an independent contractor is to be determined largely from the facts of the particular case under observation. Throughout the body of the law we find a careful selection of words in describing a situation. Rarely, if ever, do we find words used which do not upon first contact reveal the general idea sought to be conveyed. And so here. The term "independent" is descriptive of a contractor. A contractor, obviously, is one party to a contract or one who has contracted to do or perform certain work. And it becomes perhaps a commonplace to assume that every contract contains within itelf everything that is to be done or performed by each party thereto and the consideration underlying or supporting the obligation. And so, at the outset, where it is claimed that a party was an independent contractor, we may first inquire the nature of the contract or whether there was any contract. Turning then to the instant case, we inquire as to Klein's contract. He had no written contract and there is in the record nothing to indicate the terms, if any, upon which he undertook the work. The job was one entire job, not subdivided into

definite or any portions; it consisted of one entire excavation of defined area. Every one employed in the said excavation worked together to a common end. There were no means of distinguishing the work of a hired truck or an owned truck. There was no definite scale of compensation. And all of the work was to be done upon the premises of the employer, or the premises occupied by the employer in the discharge of the main contract of excavation. There was no work that Klein could do independent of the employer, inasmuch as, the latter being in exclusive control and management of the shovel, there would be no dirt to remove until the shovel furnished the load. There was no discretion vested in Klein other than to get under the shovel in his turn with the other trucks of the employer and get his load. There was no obligation upon him to take any dirt, nor was there any liability imposed upon or assumed by him if he chose not to haul. Likewise there was no obligation upon Edwards Bros. to furnish sufficient dirt to load the truck, nor was there any obligation on Edwards Bros. to continue the employment for any period. It seems generally conceded that a test in determining whether a person employed to do certain work is an independent contractor or a mere servant is the control over the work which is reserved by the employer. The power of the employer to terminate the employment at any time is a strong circumstance tending to show the subserviency of the employee, since it is incompatible with the full control of the work usually enjoyed by an independent contractor. Perhaps no single circumstance is more conclusive to show the relationship of an employee than the right of the employer to end the service whenever he sees fit to do so. Press Publishing Co. v. Industrial Accident Commission, 190 Cal. 114, 210 P. 820.

[4-6] The real test by which to determine whether a person is acting as the servant of another is to ascertain whether, at the time when the injury was inflicted, he was subject to such person's orders and control and was liable to be discharged for disobedience or misconduct. Western Metal Supply Co. v. Pillsbury, 172 Cal. 407-417, 156 P. 491, Ann. Cas. 1917E, 390. Other factors which may be considered are the hours of labor, terms of compensation, place where work is done, and manner and nature of work to be performed. These factors are discussed in an exhaustive note in 75 A. L. R. 725, to which reference is made. In the case before us the hours of labor for Klein were exactly those of the admitted employees and servants. He could work at no other time. His compensation was arbitrarily fixed by the employer for the purpose, as stated by the employer, of assuring him a fair wage. All of the work was done upon the premises under the control of his employer. Whatever argument may be made, we must eventually come back to one undenied and undeniable fact that the entire work in hand was the excavation of the lot upon which a building was to be erected. Some person must have been in control of this work as an entirety. It would seem absurd to hold that Edwards Bros. were in control of the work in as far as affected all of the trucks and men except Klein and his truck. The method and manner of removing the dirt was one entire plan. Klein had no right to remove the dirt from the truck in his own way. He had to await his turn. As an example, at or about the exact time of the accident it was Klein's desire to load up before lunch and get out. His orders from the foreman were to wait and get his load after lunch for the reason that the shovel was to be moved. We fail to find one independent act that Klein could perform upon the premises. The record does not disclose where, at any time while on the premises, Klein was beyond the immediate control of Edwards Bros. Where some fifteen trucks and drivers are engaged in the same labor to a common purpose and working together at all times it would tend to disorganization rather than toward system to deem that one was an independent contractor merely because he owned the truck he drove. If this particular one were independent, there surely must be some way through which he could manifest his independence. After all, a truck remains but an appliance, regardless of its size, a super wheelbarrow as it were. If a person should furnish his own wheelbarrow and go down into a pit to work, with a compensation based upon what the boss thought would allow him fair wages, it would seem a far stretch of principle to accord to his employment the dignity of an independent contractor. Hillen v. Industrial Accident Commission, 199 Cal. 577, 250 P. 570, affords an illustration of the principle. The case involved a shingler whose employment was to lay shingles under a mutual understanding that when he came on the job it would be $1.25 per thousand, and there was nothing further said about the agreement to shingle and when each job was done the bill would be made per thousand and after the bill was approved it would be paid. Everything was used in the actual shingling, namely hatchet, snips, and apron. Further, when necessity required, the shingler hired other men to assist him, none of whom were carried upon the employer's pay roll. There was no specified period of labor per day. The shingler was held to be an employee rather than an independent contractor. We note again this significant language: "Coincident with the right of control is the right of either employer or employee to terminate the relation without liability. This is but another way of stating the rule, for the right to immediately discharge involves the right of control." See, also, Eng-Skeel Co. v. Industrial Accident Commission, 44 Cal. App. 210, 186 P. 163. Without further discussion, we may conclude by stating that it must be conceded that appellants' strongest showing is met with a showing by respondent which leaves the question debatable. In other words, conceding that there may be certain features of the employment from which an inference supporting the relationship of an independent contractor may be drawn, yet it is equally true that there are present many facts and circumstances from which it might be reasonably inferred that the relationship was that of master and servant. It is only where the evidence is reasonably susceptible of but a single inference that the question of whether one is an employee or an independent contractor becomes one of law for the court. Nelson v. Stukey, 89 Mont. 277, 300 P. 287, 78 A. L. R. p. 491, with cases therein cited. Whether or not the relation of employer and employee exists under the contract in this case is a mixed question of law and fact to be determined in the court below like any other question, and the finding in the court below is binding upon this court, provided there be any competent evidence to support the finding. Hillen v. Industrial Accident Commission, 199 Cal. 580, 250 P. 570; Johnson v. Department of Industrial Relations, 101 Cal. App. 1, 281 P. 440; May v. Farrell, 94 Cal. App. 703, 271 P. 789; Western Pac. R. Co. v. Industrial Accident Commission, 193 Cal. 413, 224 P. 754; Case of Murray, 130 Me. 181, 154 A. 352, 75 A. L. R. 720 (with annotation), and Lowmiller v. Monroe, Lyon & Miller, Inc., 101 Cal. App. 147, at page 150, 281 P. 433, 282 P. 537.

The jury was fully and correctly instructed as to the law and its application to the facts of the case, with particular reference to the question of independent contractors and employees. Not a suggestion of criticism is presented as to these instructions. We think it was correctly determined that the relationship of employer and employee existed between Klein and Edwards Bros. at the time of the accident.

The judgment is affirmed.

We concur: WORKS, P. J.; STEPHENS, J.

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STEEL INDUSTRY WAGES

The steel industry's operation since the adoption of its Code under the National Recovery Act is reviewed by the American Iron & Steel Institute in a compendium of facts and figures just published under the title, "Steel Facts and the Steel Code."

The Institute disclosed that the current wage level in the industry was six to seven per cent higher than the peak period of 1929, although prices are still far below post-war high.

The general wage increase in the steel industry which became effective on April 1, adds approximately $3,000,000 monthly, or $36,000,000 annually to the industry's pay roll. Hourly wage rates are now approximately 36 per cent higher than in June, 1933.

The number of workers in the industry is rapidly approaching the 1929 total of 420,000. Although the number had been reduced to 210,000 in 1932, it was back up to 365,000 in February, 1934, and men were being re-employed at the rate of 10,000 or more per month.

Despite general price increases of $2 or more per ton on steel products, announced early last month, the level of finished steel prices with such increases in effect is still five per cent below the 1929 level, and 21 per cent below the post-war peak for prices in 1923.

It is not generally realized, says the Institute, that the recent slight upturn in steel prices was preceded by a decade of steadily declining prices. Steel prices began to fall in 1923, and continued to drop steadily until 1933, when the price curve straightened out and ultimately turned upward. Even then, the increase in steel prices lagged far behind the general wholesale commodity price index, which increased 21.9 per cent from February, 1933, to February, 1934, while finished steel prices rose but 5.4 per cent during the same period.

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PRE-FABRICATION

George H. Gray of New Haven, Conn., director of the New England Division of the American Institute of Architects, is emphatically opposed to pre-fabricated buildings, asserting that they do little to furnish employment and are not capital investments. He points out that 80 per cent of the cost of a well-constructed home goes for labor.

Pre-fabricated houses, often sold on the installment plan, last only five or ten years before being cast into the "automobile graveyard," he says. Abuse of installment buying, he adds, did much to bring about the depression, and should be guarded against in the future.

"A house built under competent and conscientious architectural supervision of good design, in a neighborhood selected for adequate restrictions and a good future," Mr. Gray says, "should advance steadily in value, as the neighborhood mellows, over a long period of years. Houses designed with distinction never go out of style, as witness the persistent repetition of traditional Colonial and English cottage types.

"Following this experience and this logic, the Subsistence Homesteads have been inaugurated by the Federal Government along lines which will encourage, so far as is consistent with good construction, the use of such materials as the homesteaders can put together themselves, if not individually, by those within the group.

"In sharp contrast to this we have another movement, not backed by the Administration, but one which the Government cannot afford to overlook. It is the propaganda for the pre-fabricated, portable, temporary house, to be taken off the counter, used a few years, and then cast into the 'automobile graveyard' when outmoded.

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"In other words, it is not a capital investment, and the cost would have to be distributed over the income of the five or ten years. In fact, the financing is said to be similar to that of certain motor corporations, which means the encouragement of mortgaging the wages for the years ahead. Such fabricated houses are not to be included in any survey of the building industry, except to the extent that they tend to substitute a life of vagrancy for responsible citizenship in a community."

1934 ROAD MAP

The publication of the 1934 edition of the California road map is announced by Earl Lee Kelly, director of the Department of Public Works. This new map has been prepared by the Division of Highways under the direction of C. H. Purcell, State Highway Engineer and is being issued through the Division of Documents and Publications.

The map conforms to standards adopted by the Western Association of State Highway Officials. These standards for the preparation of State road maps, control the size of the map, the colors, style of lettering and legend used, so that road maps published by all States which are members of the association are uniform in character.

The size of the map is 28 by 34 inches; it shows the entire State as a unit and is printed in four colors. The roads shown on the map include the primary and secondary routes of the State highway system and the principal county roads. Three different widths have been used in delineating the roads according to their classification as Federal aid routes, United States highways, State

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roads or county roads. Federal aid routes and U. S. highways are the widest, county roads the narrowest and the State highways not on the Federal aid system, or not United States highways, a width between the two.

All principal towns and cities are shown and the mileage between points is clearly indicated. The type of surfacing which obtains is shown by color on all roads, red indicating a high type of improvement, yellow an intermediate and black a low type.

Copies of this latest California road map may be secured from the Division of Documents, State Capitol Building, Sacramento, at a cost of thirty-five cents.

HOTEL RED BOOK

Thomas D. Green, president of the American Hotel Association, announces that the 1934 edition of the association's official directory, the Hotel Red Book, will be issued June 1.

Mr. Green says there are more changes in listings in this edition than in any other edition in the forty-eight years of Red Book history.

"We are pleased to say," said Mr. Green, "that our advertising volume exceeds that of the 1933 edition. This is a good sign of improved business conditions. Generally, hotels are the last to feel effects of any change in the business situation. We have reason to believe that in the past several months there has been a decided improvement in industry and business, generally, and hotels are just now beginning to feel the effects."

OREGON CHAPTER

The Oregon Chapter, A.I.A., held a dinner meeting followed by the regular business session, April 17th. President Parker presided. There were present: Messrs. Parker, Linde, Knighton, Jones, Wallwork, Herzog, Jacobberger, Whitney, Aandahl, Crowell, Brookman, Roehr, Bear, Doty, Newbeury, Clausen, Johnston, Wick, Forrest, Sundeleaf, Howell. Burton Palmer was a guest.

Mr. Parker read a letter received advocating the reelection of Mr. Russell as president of the Institute.

A letter was read written by S. Benson, approving the Chapter's action regarding the site of the proposed armory building.

Mr. Jacobberger discussed the idea of public school building facilities, such as gymnasiums, auditoriums, etc., being made available for the use of the public at times other than when used for school activities. The concensus of opinion of those present seemed to be that the idea was a worthy one, and one that the Chapter could properly advocate.

The president introduced Burton Palmer, State Engineer of the S.E.R.A., who made a very interesting and explanatory talk on the work done in Oregon by the C.W.A., and that contemplated by S.E.R.A.—L.D.H.

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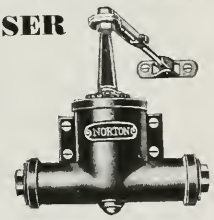

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CONTRACTORS AGENCY

Following recent appointment by the Division Code Authority for General Contractors, an organization meeting of the California State Administrative Agency was held in Los Angeles, May 7. The personnel of the Agency is as follows:

Highway Contractors — R. D. Watson, Oakland; S. M. Griffith, Los Angeles.

Engineering Contractors—Warren A. Bechtel, Jr., San Francisco; Lynn S. Atkinson, Los Angeles.

Building Contractors — H. M. Walker, Los Angeles; B. O. Larson, San Diego; Geo. J. Maurer, Oakland.

The first meeting was called to order by R. D. Watson who was later elected permanent chairman; H. M. Walker, vice-president; Warren A. Bechtel, treasurer and Floyd O. Booe, secretary.

This Agency will be the official spokesman for the General Contractors Code Authority and will undertake the administration in California of all of the provisions of the General Contractors Code and the applicable portions of the basic Construction Industry Code.

The central headquarters office of the State Agency will be in San Francisco.

21,943 CONTRACTORS

Registrations of contractors in California reached a total of 21,943, only 422 less than the total for the entire previous fiscal year, on April 1, 1934, according to the monthly report of Col. Carlos W. Huntington, California state registrar of contractors. This is a gain of almost 2000 in less than six months and is interpreted by the registrar as an indication of increasing activity in construction.

BOOST ARCHITECTS' FEE

Because the present renewal fee of $6 a year is inadequate to meet expenses of administration, the California State Board of Architectural Examiners has voted to increase the fee as allowed by law to $10 a year beginning with 1935.

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JUNE 1934

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California Acquires Historic San Juan Plaza for State Park

First Photographs and Drawings of Historic American Buildings Survey

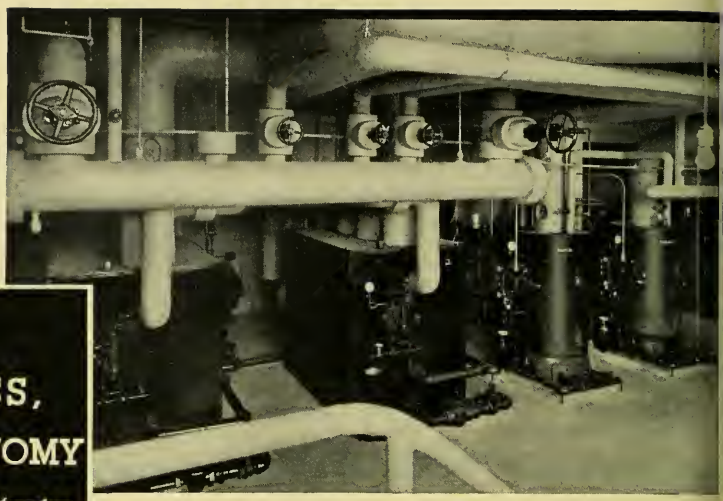
The Planning and Building of Chain Stores

San Francisco Architect Enjoys Sketching Spree Abroad

Public Lacks Architectural Knowledge, says Institute President

Winners of Mountain Cabin Competition, Los Angeles

Housing Needs of a Slumless City



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ENGINEERS will find interest in the following editorial comment in a recent issue of *Stone*, an Eastern trade publication devoted primarily to the stone industry:

"Engineers in the aggregate and as a class may have had mingled feelings of ire and self commiseration on reading, as many of them no doubt did, the article entitled 'The Overrated Engineer' in the April *North American Review*. The author of the article, an engineer himself, calls his fellows to task for a lack of initiative and scientific approach of their common problems. Engineers were also accused as being motivated chiefly by material gain. As a class, engineers, perhaps have faults, but also as a class they have contributed more than their due share to the material welfare of the rest of the world as so cannot be denied a livable compensation for their labors. Like all professions there are a few practitioners who are ineligible and who bring dishonor upon the strictly ethical members of the class. After the war the engineering profession was 'belittled" by the influx of about every form of so-called engineer that fertile brains could devise. There were sanitary engineers, many of whom weren't even good plumbers; there were ventilating engineers whose engineering knowledge was confined to electric fans, and there were countless other engineers whose activities and publicity tended to bring discredit upon the well intentioned, technically trained and honest engineers, who, after all, need have no misgivings concerning their profession or its ethics."

⁂ ⁂ ⁂

DURING the Herbert Hoover administration there was much opposition on the part of architects, builders and dealers in materials to the governmental control over Federal building plans. Government buildings, it was argued, would all be alike if designed by the same staff of architects working in the department offices in Washington. Architects throughout the country looked to the then incoming Roosevelt administration to cure this ill, but the practice has grown rather than diminished until at this time there is one of the largest bureaucratic organizations in the present government in charge of every class of building activity to which the Federal government is a party.

The private architects, it is said, are more out of the picture today than ever before, except for the more pretentious work. Following the lead of Washington, state and municipal governments are establishing bureaus and numerous public buildings have been erected from plans prepared under the direction of state and county engineers by architects who were paid low daily wages from emergency unemployment funds. If architects win recognition and retain their independence as well as gain their rights to design public buildings, they must organize to fight what has become a growing menace to recovery—bureaucracy.

⁂ ⁂ ⁂

A CRITICAL inventory of the available small houses today discloses the fact that most of them are poor investments from the standpoint of the prospective owner. Many of the small houses now in use are the product of the speculative residential building era from 1923 to 1929, when the high costs of land, of labor and materials, and of capital, together with the too common practice of cheap and faulty construction resulting in rapid depreciation and obsolescence, caused an initial and constant expenditure which is entirely out of proportion to existing market values and income levels.

The annual income of the average American has fallen below $2,000, with the average income of the industrial worker below $1500. In line with this, most industries have effected price reductions together with improvements in quality and performance; the housing industry has done little in making improvements which are within reach of the masses and yet building costs have gone higher rather than lower.

Today there is a need for one million small houses, the result of five years of almost complete lack of either building or repairing. It is estimated that in the next five years 800,000 new houses a year will be needed, calling for an expenditure of about thirty billions of dollars.

The building industry has demonstrated that a house which would be a good investment could be built for from $3500 to $5000. Whether of wood, brick, concrete, steel, stone, or some combination of these materials, the "House of the Future" is a definite possibility if the necessary economies of fabrication, assembly, construction, and materials are made, and if land and credit costs are brought into line.

The investment value of a home depends upon both tangible and intangible factors. In the first group, location, design, materials used, credit facilities, and land utilization for residential purposes are problems requiring careful study. In the latter group, population growth and mobility, city planning and zoning, industrial centralization or decentralization, and the psychological factors of the effects of ownership upon character, thrift, and citizenship demand solution. The manner in which these various problems are handled will, in large measure, determine whether America will continue to make individual homes one of its major investment fields or will look elsewhere for satisfactory investments.

The lack of needed capital for long-term credit is the greatest single deterrent to home-building today. Will the building industry make necessary changes and continue its research into materials and methods to a sufficient extent to make the "Home of the Future" available generally? The next few years must witness the marketing of a house of such low initial cost, such economy of operation and maintenance, such durability of materials, and such ease of long-term financing that it will meet the accumulated need for "ONE MILLION A YEAR" new homes.

⁂ ⁂ ⁂

THE death of Cass Gilbert in Brockenwurst, England, May 17th, marks the end of a notable career of one of the world's greatest architects. Cass Gilbert was internationally known largely because he was the architect of the Woolworth Building, for many years the world's tallest skyscraper. The profession is interested in Cass Gilbert's views on high buildings. He had been architect for many such structures and the Woolworth Tower, when it was built, capped them all. Later he said publicly, "The most beautiful skyscraper that is possible has not yet been built. It may never be built. Those of us living today may never see it, and remote posterity may never see it, for the need may change, and these ephemereal structures will not and these ephemeral structures will not known as the designer of a number of notable state capitol buildings. In 1926 he was elected president of the National Academy of Design. He was 74 years old.

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JUNE
1934

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Photo by Irving F. Morrow

FRONT OF CHURCH, MISSION SAN JUAN BAUTISTA

THE
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AND ENGINEER

JUNE 1934
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NUMBER THREE

A NEW STATE MONUMENT AT MISSION SAN JUAN BAUTISTA

by
MRS. EDMUND N. BROWN
State Park Commissioner

THE State of California has recently acquired from funds provided in the state park bond issue of 1927, and through the help of the town of San Juan, the owners of the historic buildings and the San Juan Plaza Preservation League, the old San Juan Plaza and its early buildings which face the Mission San Juan Bautista, as a State Monument. Around this sweet-scented locust bordered Plaza of San Juan are grouped old adobe and frame buildings which are true California landmarks of the early Spanish period. Here at San Juan is the only plaza which has survived practically unchanged. In 1883 Helen Hunt Jackson wrote: "At San Juan Bautista there lingers more of the atmosphere of the olden time than is to be found in any other place in California." Now, half a century later, one happily finds the same quiet atmosphere with the old buildings undisturbed by neighboring modern structures.

The most interesting building facing the Plaza is the Mission which is not owned by the state but is being cared for by the Catholic Church. This Mission, one of the most beautiful and best preserved of the California Missions, was founded on St. John's day, June 24, 1927, by Father Lasuen. The corner stone of the church was laid June 13, 1803, and the Mission dedicated June 25, 1812.

The Mission is laid out in two wings. In front to the left of the church is a long cloister or arcade which forms one side of the plaza. Behind the church are two adobe structures, one the original chapel. The church is 188 feet long, 72 feet wide with walls three feet thick. The walls were supported by four buttresses on either side. Those on the northeast are still standing. The San Juan Bautista church was the only one in the mission chain which was built with three aisles. The walls of the nave are divided into arches, seven on a side. Fear of earthquake caused all the arches except the two nearest the altar to

be filled in. The interior walls of the church were covered with native mural decorations but unfortunately these have been blotted out with whitewash.

The buildings were roofed with tiles (tejas) which were shaped by hand and were said to be molded on the thighs of the Indians. The process of laying the tile was as follows: To the heavy ridge pole, which was never less than eight inches square was attached the rafters of redwood or alder spalings about eight inches thick, firmly secured by thongs of soaked rawhide. On these rafters was spread a thick layer of willow boughs and the whole was covered to the depth of two inches with a layer of thick mud. The tiles were laid on this bed with first concave and then convex side up, overlapping at the ends, thus making a complete protection against the rain. The surface of the Mission walls was covered with a coating of lime mortar, which has wonderfully resisted the elements.

The first building of the Mission occupied the ground now the site of the Plaza Hotel and the Castro Adobe. The Castro or Breen house was built about 1825 and served as the home of Jose Castro Commandante-General, and Mexican Governor for a few months following Governor Figuroa. The year Castro was governor, 1835, Mexico ordered ten of the Missions converted into pueblos. San Juan was of that number and received the name of San Juan de Castro.

General John C. Fremont was a visitor to San Juan on several occasions. It is said that he visited Castro there prior to his encampment on the nearby Galilan Peak (now Fremont's Peak) where he raised, unofficially, the American flag. At the request of Commodore Sloat he raised it officially at San Juan on July 19, 1846, when California was taken over by the United States. The Castro house which was later the home of Patrick Breen and his family who were members of the ill-fated Donner party, is considered one of the most beautiful examples of early Spanish architecture in the state. Its long narrow balcony and antique tiled roof add an air of beauty to this time scarred adobe.

Adjacent to the Castro house is the Plaza Hotel which was once a one-story adobe, built, it is claimed, in 1792 to house those who labored to build the Mission and to serve as a barracks for the Spanish soldiers. In 1849 Breen opened the first hotel "The Inn" and during the gold rush made plenty of money. His neighbor, Angelo Zanetta, after remodeling and adding an upper story of wood, opened the Plaza Hotel on June 24, 1856. The hotel became noted for its cuisine and fine liquors. It was the headquarters for the overland stage and the favorite hotel for fiesta guests, traders and travelers. It afforded shelter to many celebrities, such as Bayard Taylor, John Jacob Astor, Generals U. S. Grant, Sheridan and Sherman. Tony Taix became proprietor of the Plaza for awhile and was followed by a Mr. Beck and later by his widow, who sold it to the state. The hotel with its old bar is in excellent condition with the exception of some interior "improvements" which do not reflect the atmosphere of the olden days.

The Zanetta House, which is directly across the Plaza from the Mission, was originally an adobe building erected about the same time as the Plaza Hotel and was originally used as a barracks. The adobe walls of the first floor still remain but the house was rebuilt as it now stands in 1861, about the time the United States established military headquarters, Camp Low, named for California's Governor, at San Juan

[Please turn to Page 45]

EARLY CALIFORNIA ARCHITECTURE

by
IRVING F. MORROW

The Historic American Buildings Survey is an important step forward in the conservation of our national historic resources. The type of shelter devised by mankind in every age and climate is an expression of the life of the people. In the United States, the adobe hut, the cliff dwelling of the agricultural Indian, the tepee of the nomad, the log cabin of the pioneer, the cottage, the farmhouse in the country, the city dwelling, each expresses eloquently the culture and mode of life of the original, tenant or owner.

The churches and missions of the Franciscans and Jesuits of the South and West, the churches of the Russians in Alaska, the meeting houses of the Puritans in the East and Middle West, the colleges, hospitals, mills, warehouses, shops, and other buildings of use in the community, all belong to a chapter of the Nation's history. Unfortunately, a large part of our early American architecture has disappeared. It is inevitable that the majority of structures will at some time outlive their ultimate usefulness. And it admittedly is impracticable to preserve all buildings or sites associated with events of incontestable historic importance.

It is possible, however, to record in a graphic manner and by photography, before it is too late, the exact appearance of these buildings and their surroundings. This is the purpose of the Historic American Buildings Survey.

The buildings considered have been selected for measuring and photographing in the approximate order of their historic and architectural importance in their districts. The record is made as a form of insurance against loss of data through future destruction, and also as a contribution to the study of historic architecture.

HAROLD C. ICKES,
Secretary of the Interior.

ON the general purpose and justification of the Historic American Buildings Survey it is unnecessary to add to the statement of Secretary Ickes quoted above.

The Survey—H.A.B.S. to the initiated, following our current vogue for alphabetical designation — was a Federal C.W.A. project of national scope. As to general methods and standards it was directed by the National Park Service in the Department of the Interior. The actual work was decentralized among thirty-nine districts covering the entire United States.

District No. 38, which the writer had the privilege of directing, comprised California, north of San Luis Obispo and Tehachapi. Work was organized in early January of this year with a force of twenty. At the reorganization of the C.W.A. in the middle of February the force was re-

duced to ten. During April a progressive tapering off was effected until the work came to a close at the end of that month.

The District was fortunate in assembling a conspicuously able and interested force. At the outset it was divided into five squads, each with one member designated as field leader. These groups first dispersed for measuring buildings according to a prearranged program. The respective destinations were Monterey; the Salinas Valley; San Juan Bautista; Sonoma County; and the Mother Lode District. On the completion of measurements, which were made with great thoroughness and accuracy, squads returned to San Francisco, where drafting was done on standard sheets furnished by National Headquarters.

Two ideals were kept constantly in mind —to produce documents worthy of becoming national records, and so complete that a building destroyed could actually be reproduced. Photographs, written historical data, and a card index of historic buildings (whether measured or not) supplemented these drawings. All this material is deposited in the Library of Congress.

Photo by Roger Sturtevant

LOGGIA, MISSION SAN JUAN BAUTISTA

In northern California there exist the architectural relics of three distinct cultures; the Spanish, the Russian, and the American mining period. All three are represented among the ten projects which have been completed. These, with the numbers

of drawn sheets and of photographs comprising each, are as follows:

Building	*Drawings*	*Photographs*
Vallejo Adobe near Petaluma	9	11
Mission San Antonio de Padua	17	9
Mission San Juan Bautista	38	22
House of Mexican Period, San Juan	3	2
San Carlos Church, Monterey	28	17
Jewish Cemetery, Sonora	4	4
Miller's House, Knights Ferry	3	3
Small Adobe near Petaluma	1	1
Russian Chapel, Fort Ross	6	7
Grave Stones, Columbia and Sonora	1	13

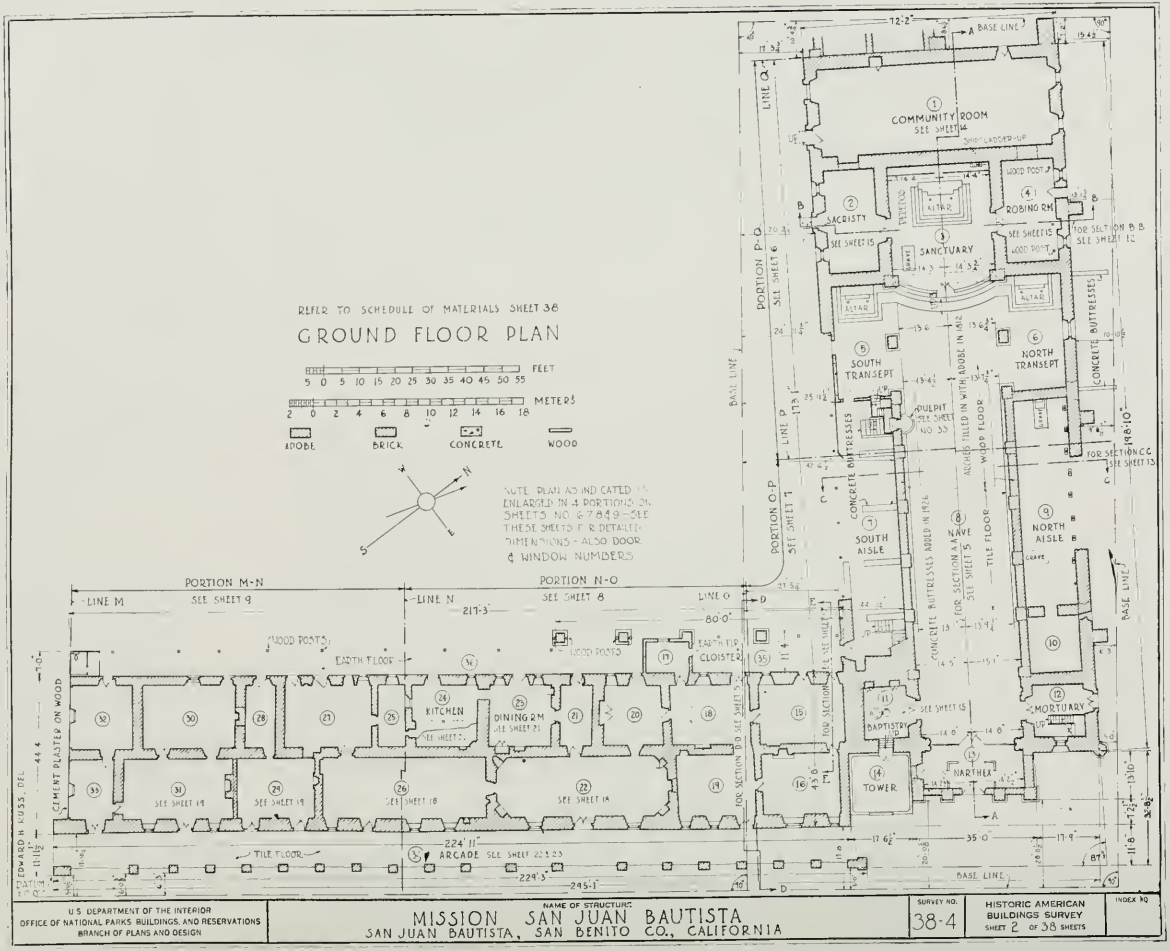
In addition to the above indicated photographs supplementing the drawn work, there are also about 350 photographs of buildings of which measurements could not be attempted. These constitute a valuable pictorial record of historic buildings in almost all parts of the District. Through neglect and alteration this architectural heritage is rapidly suffering destruction and change—in some cases almost while the photographs were being taken.

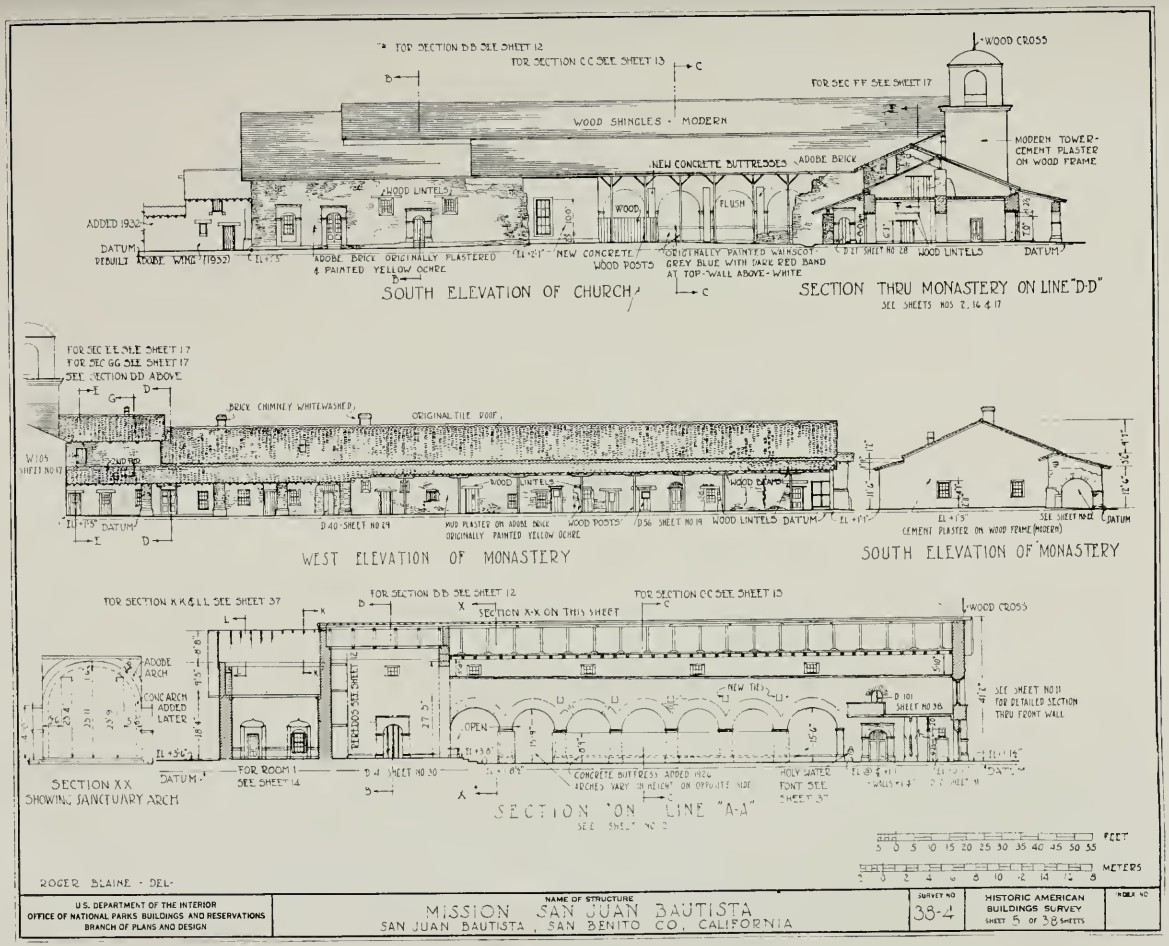
It is anticipated that the projects listed above will in the near future be supplemented by a half dozen or more additional projects made possible through volunteer work and other relief organizations.

From this work of District No. 38 of the Historic American Buildings Survey THE ARCHITECT AND ENGINEER has selected representative drawings and photographs for a series of portfolios; of which the present one, devoted to Mission San Juan Bautista, is the first.

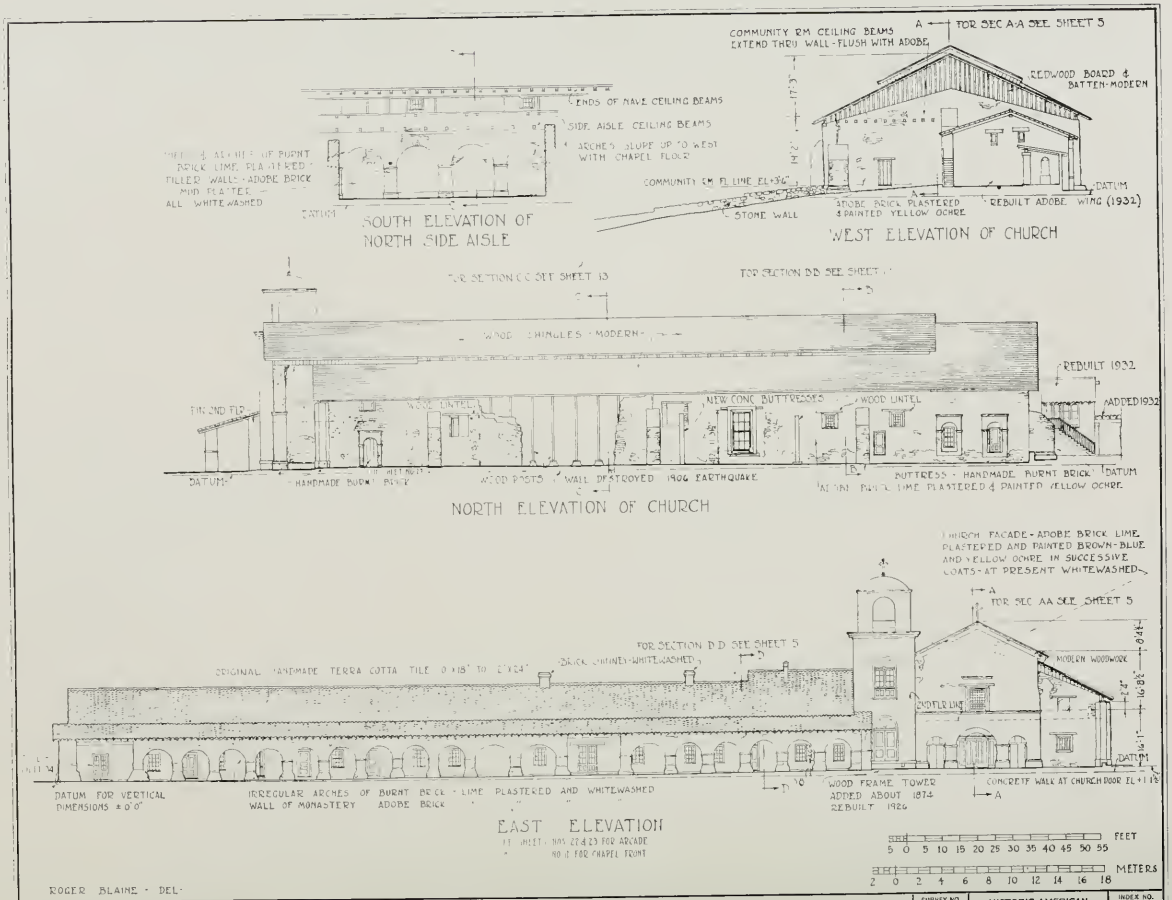
Photo by Roger Sturtevant

INTERIOR, MISSION SAN JUAN BAUTISTA


REFER TO SCHEDULE OF MATERIALS SHEET 38
GROUND FLOOR PLAN
FEET
METERS
ADOBE
BRICK
CONCRETE
WOOD
NOTE: PLAN AS INDICATED IS ENLARGED IN 4 PORTIONS ON SHEETS NOS 6-7-8-9 — SEE THESE SHEETS FOR DETAILED DIMENSIONS - ALSO DOOR & WINDOW NUMBERS
PORTION M-N
PORTION N-O
PORTION O-P
LINE M
LINE N
LINE O
LINE P
A BASE LINE
BASE LINE
COMMUNITY ROOM
SACRISTY
SANCTUARY
ROBING RM
SOUTH TRANSEPT
NORTH TRANSEPT
SOUTH AISLE
NAVE
NORTH AISLE
PULPIT
BAPTISTRY
MORTUARY
NARTHEX
TOWER
KITCHEN
DINING RM
EARTH FLOOR
TILE FLOOR
WOOD FLOOR
ARCADE
CLOISTER
CONCRETE BUTTRESSES
ADOBES TILLED IN WITH ADOBE IN MUD
EDWARD H. KUSS, DEL.
CEMENT PLASTER ON WOOD
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
NAME OF STRUCTURE:
MISSION SAN JUAN BAUTISTA
SAN JUAN BAUTISTA, SAN BENITO CO., CALIFORNIA
SURVEY NO. 38-4
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 38 SHEETS
INDEX NO


FOR SECTION D-D SEE SHEET 12
FOR SECTION C-C SEE SHEET 13
FOR SEC F-F SEE SHEET 17
WOOD CROSS
WOOD SHINGLES - MODERN
MODERN TOWER- CEMENT PLASTER ON WOOD FRAME
NEW CONCRETE BUTTRESSES
ADOBE BRICK
WOOD LINTELS
ADDED 1932
DATUM
REBUILT ADOBE WALL (1932)
ADOBE BRICK ORIGINALLY PLASTERED & PAINTED YELLOW OCHRE
NEW CONCRETE WOOD POSTS
WOOD
FLUSH
ORIGINALLY PAINTED WAINSCOT GREY BLUE WITH DARK RED BAND AT TOP - WALL ABOVE - WHITE
SEE SHEET NO 28
WOOD LINTELS
DATUM
SOUTH ELEVATION OF CHURCH
SECTION THRU MONASTERY ON LINE "D-D"
SEE SHEETS NOS 2, 14 & 17
FOR SEC E-E SEE SHEET 17
FOR SEC G-G SEE SHEET 17
SEE SECTION D-D ABOVE
BRICK CHIMNEY WHITEWASHED
ORIGINAL TILE ROOF
WINDOWS SEE SHEET NO 17
2ND FLR
1ST FLR
WOOD LINTELS
WOOD LINTELS
DATUM
D 40 SHEET NO 29
MUD PLASTER ON ADOBE BRICK ORIGINALLY PAINTED YELLOW OCHRE
WOOD POSTS
D 56 SHEET NO 19
WOOD LINTELS
DATUM
SEE SHEET NO 12
CEMENT PLASTER ON WOOD FRAME (MODERN)
DATUM
WEST ELEVATION OF MONASTERY
SOUTH ELEVATION OF MONASTERY
FOR SECTION K-K & L-L SEE SHEET 37
FOR SECTION D-D SEE SHEET 12
SECTION X-X ON THIS SHEET
FOR SECTION C-C SEE SHEET 13
WOOD CROSS
ADOBE ARCH
CONC ARCH ADDED LATER
RECESS SEE SHEET 12
OPEN
NEW TIES
D 101 SHEET NO 36
SEE SHEET NO 11 FOR DETAILED SECTION THRU FRONT WALL
DATUM
FOR ROOM 1 SEE SHEET 14
D 41 SHEET NO 30
CONCRETE BUTTRESS ADDED 1926 ARCHES VARY IN HEIGHT ON OPPOSITE SIDE
HOLY WATER FONT SEE SHEET 37
WALLS +1.3'
SECTION XX SHOWING SANCTUARY ARCH
SECTION "ON LINE "A-A"
SEE SHEET NO 2
FEET
METERS
ROGER BLAINE - DEL.

U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS BUILDINGS AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE MISSION SAN JUAN BAUTISTA SAN JUAN BAUTISTA, SAN BENITO CO., CALIFORNIA	SURVEY NO 38-4	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 5 OF 38 SHEETS	INDEX NO


SOUTH ELEVATION OF NORTH SIDE AISLE
WEST ELEVATION OF CHURCH
NORTH ELEVATION OF CHURCH
EAST ELEVATION
ENDS OF NAVE CEILING BEAMS
SIDE AISLE CEILING BEAMS
ARCHES SLOPE UP TO WEST WITH CHAPEL FLOOR
DATUM
COMMUNITY RM CEILING BEAMS EXTEND THRU WALL-FLUSH WITH ADOBE
FOR SEC A-A SEE SHEET 5
REDWOOD BOARD & BATTEN-MODERN
COMMUNITY RM FL LINE EL+36"
STONE WALL
ADOBE BRICK PLASTERED & PAINTED YELLOW OCHRE
REBUILT ADOBE WING (1932)
FOR SECTION C-C SEE SHEET 13
FOR SECTION D-D SEE SHEET 5
WOOD SHINGLES - MODERN
REBUILT 1932
ADDED 1932
NEW CONC BUTTRESSES
WOOD LINTEL
WOOD POSTS
WALL DESTROYED 1906 EARTHQUAKE
BUTTRESS - HANDMADE BURNT BRICK
ADOBE BRICK LIME PLASTERED & PAINTED YELLOW OCHRE
CHURCH FACADE - ADOBE BRICK LIME PLASTERED AND PAINTED BROWN-BLUE AND YELLOW OCHRE IN SUCCESSIVE COATS - AT PRESENT WHITEWASHED
FOR SEC AA SEE SHEET 5
ORIGINAL HANDMADE TERRA COTTA TILE 0'-18" TO 1'-0"x24"
BRICK CHIMNEY-WHITEWASHED
MODERN WOODWORK
DATUM FOR VERTICAL DIMENSIONS ± 0'-0"
IRREGULAR ARCHES OF BURNT BRICK - LIME PLASTERED AND WHITEWASHED
WALL OF MONASTERY ADOBE BRICK
WOOD FRAME TOWER ADDED ABOUT 1874 REBUILT 1926
CONCRETE WALK AT CHURCH DOOR EL +1'-1"
FEET
METERS

ROGER BLAINE - DEL.

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS AND RESERVATIONS
BRANCH OF PLANS AND DESIGN

NAME OF STRUCTURE
MISSION SAN JUAN BAUTISTA
SAN JUAN BAUTISTA, SAN BENITO CO., CALIFORNIA

SURVEY NO. 38-4

HISTORIC AMERICAN BUILDINGS SURVEY
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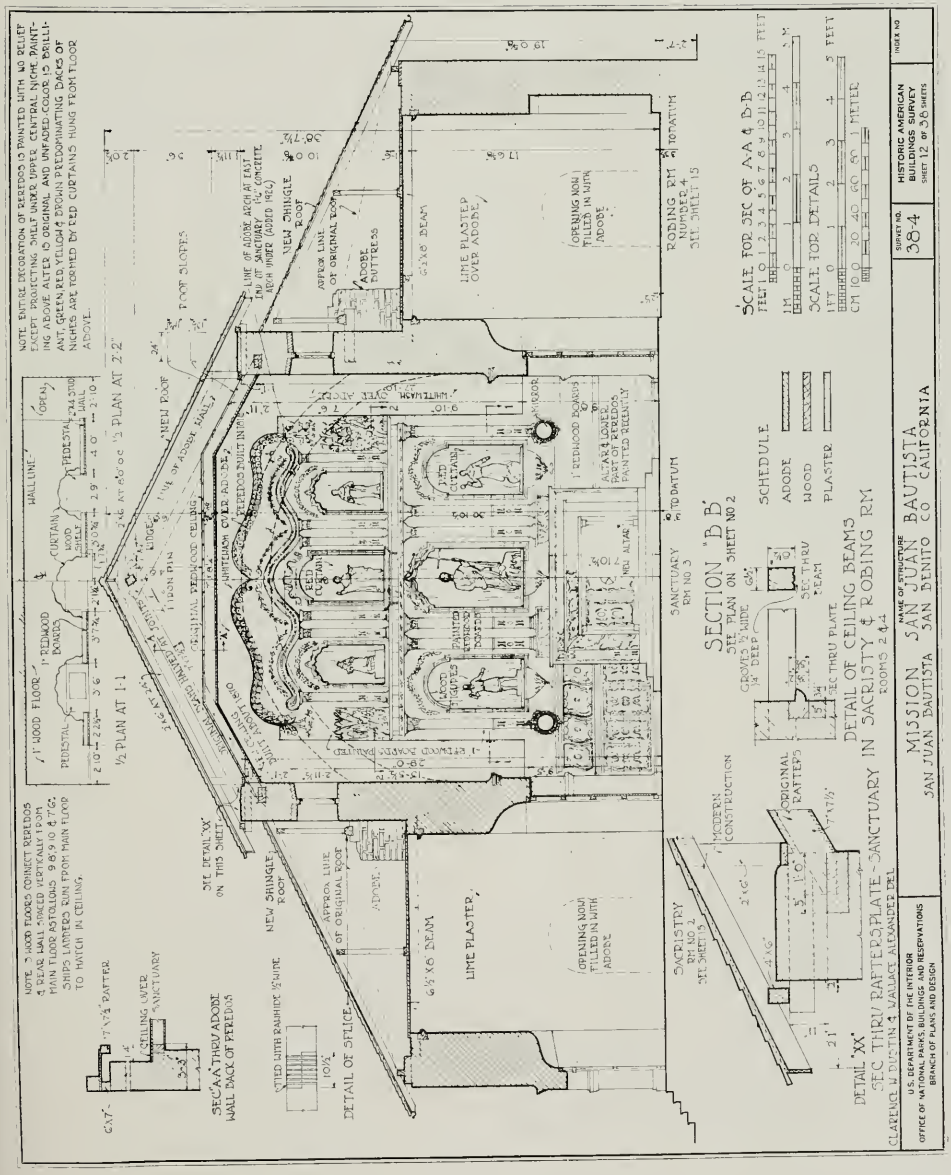

SECTION "B-B"
SEE PLAN ON SHEET NO 2
SCHEDULE
ADOBE
WOOD
PLASTER
DETAIL OF CEILING BEAMS IN SACRISTY & ROBING RM
ROOMS 2 & 4
SCALE FOR SEC OF A-A & B-B
SCALE FOR DETAILS
MISSION SAN JUAN BAUTISTA
SAN JUAN BAUTISTA SAN BENITO CO CALIFORNIA
NAME OF STRUCTURE
SURVEY NO. 38-4
HISTORIC AMERICAN BUILDINGS SURVEY
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INDEX NO
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
SACRISTY
SANCTUARY
ROBING RM
NEW SHINGLE ROOF
LIME PLASTER
DETAIL OF SPLICE
SEC A-A THRU ADOBE WALL BACK OF REREDOS

MODEL OF THREE INTERESTING HOMES IN SEACLIFF, SAN FRANCISCO
Geo. E. McCrea, Architect

BUILDING COSTS SCANDALOUS

John M. Keynes, distinguished British economist, has this to say about the building situation in America:

"The high level of building costs in this country appears to be scandalous, both of building materials and of direct labor. They must be more than 50 per cent above and perhaps double what they are in England. So long as the volume of work remains as low as it is now these high costs do not mean high incomes to producers. Thus no one benefits.

"It is of first importance for the Administration to take whatever steps are in its power to reduce unit costs in these industries against an undertaking to increase the volume of business sufficiently to maintain and probably to increase actual earnings."

CHAIN STORE OPPORTUNITIES

by
G. A. ANDERSON ★

IN a day when chain stores are flourishing and the individual merchant is rather hard pressed, it should be of more than passing interest to any young architect to note how chain stores are organized and to what extent is the opportunity for the practice of his profession in this particular field.

Tour through the country, walk through their stores, note the lines to their buildings, and outside of their color scheme, one is struck with the amazing similarity of chain stores that belong to the various price groups. In fact, their color schemes are their most striking differences and also one of their most valuable assets. These color schemes have been assiduously developed and cultivated. They have been arrived at after very careful study as well as through the method of trial and error. Chain stores wish to be recognized that way.

Most of the larger chain stores have their own architectural departments, located, generally, at their head offices where the plans are drawn and then submitted to local bidders for figures. Although costs are pretty constant all over the country, that is, constant from an estimating viewpoint at some head office, due allowance must be made for extreme local conditions, and a survey at the very beginning as to the prevailing labor and material prices in that locality is generally worthwhile. Most of these store buildings have to be built within a fixed appropriation. These appropriations must be met, and when bidders submit figures that clearly indicate that the cost of the building will exceed the appropriation, there is nothing else to do but revise the plans to meet the appropriation—all of which could have been avoided with a preliminary survey.

The Architectural Departments of the larger chain stores are well organized and highly centralized. It must be so in order to achieve uniformity of design as well as savings through quantity buying—just as they must accomplish this in the field of merchandising.

There is, therefore, very little room for any individual expression on the part of any architect or draftsman. A building must be designed to meet the company's ideas as to what it should look like.

It is not a particularly good field for any architect who wishes freedom of expression or an opportunity for the development of any bold or radical design. If the young architect would keep this in mind and subordinate any innate desire for self-expression, his work will be more appreciated by his employer.

Let us at this juncture say something of the Real Estate Departments of such concerns, as their activities at times are so closely entwined with those of the Architectural Departments. Generally the Real

EDITOR'S NOTE—The author is junior construction engineer for Montgomery Ward & Co., Oakland, California.

Estate Department is a separate working body. With others, the two are combined; but whatever the organization chart may show, these two departments must function very closely and harmoniously.

The usual procedure, of course, is for the Real Estate Department to carry out the negotiations. However, this is done generally on the basis of the costs submitted by the Architectural Department. It is evident that the governing data as supplied by the Architectural Department must play an important part. Indeed, this preliminary price estimate, in many a situation, has been the deciding factor in swinging the negotiations one way or another.

When the sale of a certain piece of property has been closed or a lease signed, then it is that the Architectural Department steps into the picture in bolder outline. It is now their function to design a store building that will meet the set standards and requirements of the company.

An oft-repeated bit of advice is that the Architectural Department should be adequately provided with all local and state building codes and ordinances. However, there always seem to be discrepancies in design, or conflicts with local codes, which manage somehow to escape the initial attention of the Architectural Department. Some are trifling and can easily be corrected. Others are of major importance, and yet they are neglected.

With many an Architectural Department located in the East, the Uniform Building Code on the Pacific Coast seems to hold special terror. The concept of over 120 cities on the Pacific Coast, all subscribing to this Code, is hard to put over, in spite of the fact that copies of this Uniform Code, as published by the Pacific Coast Building Officials Conference, are easily obtained at a nominal cost.

This Uniform Building Code is an outstanding achievement on the part of the Pacific Coast Building Officials Conference. Following the lack of uniformity existing in the various cities and state building codes, this group of men, as early as 1922, took upon themselves a great deal of hard work and missionary labor. The fact that over 120 cities on the Pacific Coast have adopted the Code as their City Code is due entirely to their perseverance and unbiased regard for local requirements for the safe regulation of building construction. The book itself is compact, although over 270 pages. It is well edited and it covers very ably and amply the building field.

In the State of California particular emphasis is placed on knee bracing and adequate design to meet lateral stress. There are earthquakes in California, and the earthquake hazard must be squarely met. A copy of the latest Uniform Building Code, as well as all state and local regulations on this subject, should be obtained at the very start of any store building design in California. When full recognition of this factor is not taken into account, a city engineer is obliged to reject the design and ask for a new one. This means a re-design, and the cost of making it, as well as the loss in time, could have been easily avoided.

To the young architect, then, it would be well for him to consider this as just a sketch of chain store organization and some of the problems that confront him there. As long as chain store sales continue to expand, the opportunities in this field are bound to grow.

STRAY LEAVES FROM A SKETCH-BOOK IN FRANCE

by
NATHANIEL BLAISDELL
Architect

THE self-centered, self-satisfied citizen of the "greatest and most glorious country in the world", when he strays abroad is apt to be surprised in finding that "there are others" and also there are other ways of living than life in an automobile-radio equipped. In France he will miss the bare flag-poles and bent-over, wire-strung, radio mastlettes that ornament the tops of all buildings at home, be they never so humble, and the absence of billboards makes him wonder how the Frenchman knows what and where to buy or how far to walk for a cigarette.

The nearly uniform height of the buildings on the boulevards of Paris is soothing to the sight, while the varied skyline in the narrow ways of "Old Paris" is a constant delight with its unstudied grouping of mansard and gambrel roofs, dormers, oeil-*de-boeuf* windows blinking among the huge chimney stacks in great variety, braces and wrought anchors, and makes a picture of every vista.

In straying about provincial and rural France the skylines and vistas are just as charming in towns and cities that are beautiful, quaint and interesting, with nothing ugly, nothing crude nor repelling. The countryside seems to exist to lead one on to the next village, its scenery pure and undefiled, its rural pursuits piquant and picturesque.

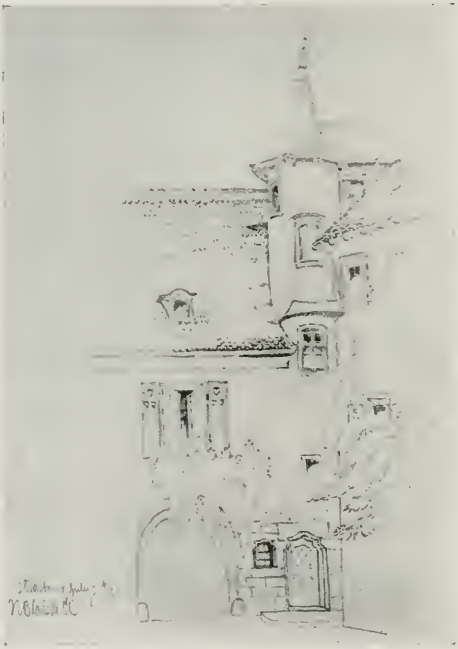
Morlaix offers street effects suited to the exploits of a D'Artagnan and in Saumur buildings group themselves as if set for an operatic performance.

Time is Nothing to this Cunning Colombage on the House of Adam, Angers, circa 1325.

Angers has a gem of a monument to King Rene', standing there for five centuries. Around the sides of the die are quaint and naive panels celebrating the high spots in the lives of the princes and princesses of the Angevine dynasty. Rene' has a fairy-tale sound and some of his doings read like fairy-tales and while the griefs and triumphs of his successors and their wives and daughters were real enough to the actors, sculptor David of Angers has so happily depicted them that at this late day they seem like doll's play.

The House of Adam still exists in Angers, perhaps so-called because when it was built in the early 14th century there was in the little *place* in front of it a statue of Adam and Eve between two plane trees. However, in 1714 it did come into its own and became the possession of Michel Adam. The house is a choice example of half timber construction properly and fittingly ornamented. The huge corner-posts and division posts are embellished at the second and third story overhangs with colombages that are marvels of wood carving. The one on the right of the portal is of a bag-piper carved from solid oak and is a fine subject for a sketch.

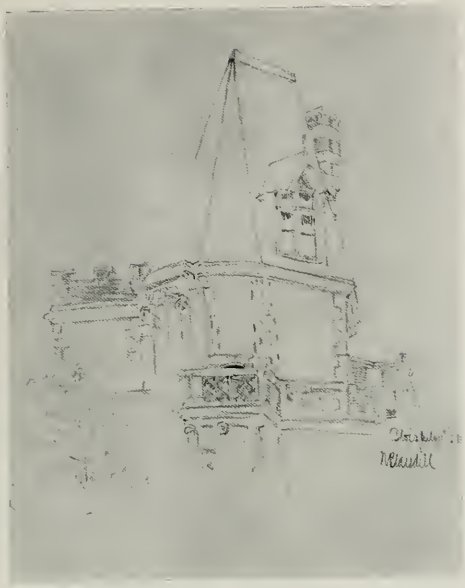
THATCHED ROOFS WORN AND WARPED BY THE WEATHER SERVE WELL IN BRITTANY



QUIET CORNER OF A QUAINT COURTYARD IN STRASBOURG

Vannes, a small city in Brittany, has a city hall that might serve as a model for Hotel de Villes throughout France or America either, for that matter. The thick, heavy doors of its cathedral are hung on hinges boldly but beautifully wrought and *look* equal to their part; the iron is true to its forging and the exquisite craftsmanship recognizes its duty and does it.

Very odd are the tidal harbors of Brittany with doors shut and boats afloat way up in the air inside the locks while just below is nothing but mud and a few puddles;



A DORMER DOMINATING THE VALLEY OF THE LOIRE AND THE CHATEAU BLOIS

—or, as at Vannes, a steamer high and dry on a mudbank, steam up and no place to go until the tide returns.

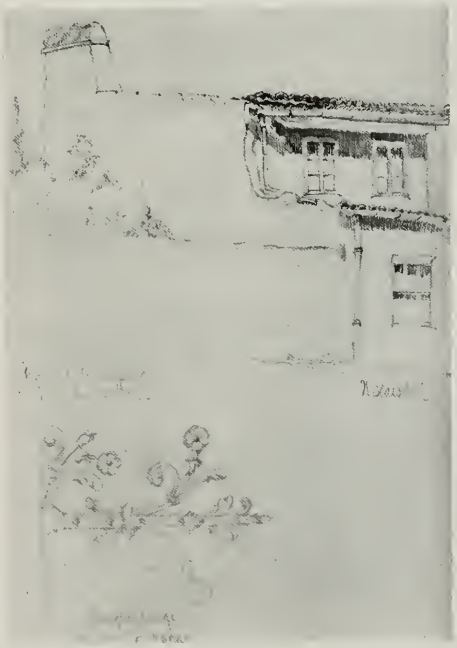
In Concarneau the fishing-boats are not lined up at the quais in rows but are anchored in groups out in the harbor where they swing with the tide and rub noses like a happy family and with the drying nets, soft-tinted in pale purple, gray green or faint russet, — hung from mast and poles beside the mast and from the tilted-up bowsprit,—tone down the shores, and the distance through them is enchanting.

The ramparts and towers of St. Malo are as medieval as Carcassonne and as well preserved. The Bretons are skilled masons, they dress and carve the native stone, granite, like sandstone. The twin spires of the cathedral of Quimper are like lace, as is the superb fleche of the Chapel of the Kreisker at St. Pol de Leon; — and if the Palazzo Pubblico's tower of the Mangia at Siena is, as Howells says "a flight", then the tower of the Kreisker is up-soaring personified.

Throughout Brittany, buildings, houses, cottages, barns and even sheds are of well cut, well set granite, roofed with slate yet often thatched. A 2-story house on the main street of Pont Aven has a thatched roof that compels attention and admiration.

One beauty spot in Touraine, the Chateau Country and the paradise of France to all Frenchmen, is Blois. Here the roofs are steep and the roofs of the towers steeper and all roofs of slate. Houses are apt to be of two or more periods but happily combined.

In Strasbourg along almost any street one may come upon an archway and entering may find a courtyard wide and spacious built about on all sides with vine covered walls, doors and inner archways,



A VIGO-ROUS CHIMNEY (upper)
BOLDLY AND BEAUTIFULLY WROUGHT HINGES OF THE CATHEDRAL DOORS OF VANNES

MARSEILLES HAS ITS GORE CORNERS AS WELL AS SAN FRANCISCO

shingle-tile roofs, dormers and corner towers in charming array, and maybe a kindly old lady may bring out a chair for the sketcher and with difficulty be prevailed upon to accept a couple of francs for her courtesy. If Rembrandt was proud of his 100 guilders print may not an humble fol-

A TOWER THAT HAS BORNE THE ONSLAUGHT OF MANY AN ENGLISH SIEGE AT ST. MALO

lower be happy with his 200 centimes sketch?

Tightly closed blinds all over the place make Marseilles seem an abandoned town in summertime when the excessive heat and the oppressive glare of the sun drive everyone behind these blinds and from noon until four they can neither see nor be seen. It is said there is considerable abandon in Marseilles.

Audierne, Concarneau, Douarnenez; Carcassonne, Avignon, Tarascon,—are as appealing to the eye as their names are musical to the ear.

Not the least interesting effect in outdoor sketching is the interest the passers-by have in the effort. In Blois a score of street urchins so enveloped the worker that he could not glimpse his subject. Asking them to get out of his way, they filed up in a double row and gave him a narrow alley to peer through. Anyway they understood what he thought was French. While sketching the bag-piper of Angers half a dozen little girls chased each other around the bench where he was sitting, bumped against him and kicked up so much dust that even the bag-piper was choked or should have been.

The lion of the Institute of France was booked at the request of the wife of an artist friend who lives in Paris and in whose charming home the sketcher has been frequently and royally entertained, all from a happening of some years ago in Granada when he seated himself at a table of the sidewalk cafe in front of the Washington Irving Hotel and while waiting for the order to be brought opened his book to add a line or two to his attempt on a bit of the Alhambra. A gentleman at the next table begged pardon and asked to see the book. He proved to be an artist. From this chance remark and unexpected meeting a treasured friendship has developed.

So much for sketching!

INSTITUTE PRESIDENT SAYS PUBLIC LACKS ARCHITECTURAL KNOWLEDGE

A NATIONAL program to develop "a tremendous field of work" for architects, one of the groups hardest hit by the depression, was outlined by Ernest J. Russell of St. Louis, president of the American Institute of Architects, in an address opening the sixty-sixth convention of the Institute in Washington last month.

Homes, stores, and other types of low cost buildings, which will be built by the hundreds of thousands in the next few years, provide unparalleled opportunity for the architectural profession, Mr. Russell said. The nation, he declared, must be educated in architectural appreciation so that "the art and practice of architecture may be taken as much a matter of course in this country as is the art of music in the Latin countries."

Mr. Russell reported that there has come about within a few months a greater solidarity and a better understanding among the different elements composing the construction industry.

"Regardless of the future of the NRA, the foundation has been laid upon which we may reasonably expect to build a structure that will reflect the importance of the construction industry, and we have assurance that the benefits will be permanent," he continued.

"Architects have demonstrated their courage under the most adverse circumstances. We can solve satisfactorily our problems even though they may seem stupendous. A revolution has taken place in many phases of American life. Our conditions parallel those of others. We shall meet these changing conditions in the same spirit that we have exhibited in past emergencies."

The architect's compensation today does not compare favorably with that of a century ago, according to Mr. Russell, pointing out that under the codes it is possible to eliminate this handicap by making plain the various types of architectural service so that the architect's charges may be intelligently fixed.

There is a very general feeling that the Institute should be more democratic, Mr. Russell said. A democratic organization, he asserted, is inevitable, and the Institute must determine whether it is to become more truly representative of the whole architectural profession or whether it is to be an "Academy", thereby encouraging the creation of another national organization of architects.

"The Institute, as the national organization of the profession, has been praised, and damned, for doing too much or too little; for leaning too strongly toward the aesthetic, and for going too far afield in its

relation to the construction industry," he added.

National understanding of architecture should begin in the high schools, and be fostered in every community as a civic enterprise under the leadership of the Institute's sixty-seven Chapters, said Mr. Russell. In the schools of architecture, he explained, design of large and comparatively rare types of buildings is emphasized, although only a small percentage of architectural students are inherently capable of developing the genius necessary to solve the problems of design which are involved.

The large majority of the students he held, can easily be developed into able men well qualified to solve satisfactorily the average building problem. This he considered the largest field of all.

"When we compare the total amount of building construction with that portion of it designed by architects, we realize that something is wrong with the architect, or the building public, or both," he went on. "It is a severe indictment of the architect that he does so small a percentage of the construction work of the average individual, such as homes, stores, and many other types of buildings which are comparatively low in cost, but of great importance to the owner.

"He does not turn instinctively to architects to solve these small building problems, because he has not been convinced that they are interested, or that they can save him money and give him a better building. It is largely through other non-professional groups that the designing needs of the small client are supplied, and it is unfortunate for him and his community that this is the case.

"If the Institute had a million dollars a year to spend in and from Washington, it could not prevent encroachments by others on the field of the architect, or disregard of the architect by local governments."

Following Mr. Russell's address the report of the Institute Treasurer was presented by Edwin Bergstrom of Los Angeles, and the report of the Board of Directors by Secretary Frank C. Baldwin of Washington.

* * *

The convention covered a period of three days, during which the problems of architecture and the building industry were discussed. Public works legislation was the principal topic of the sessions.

Meeting simultaneously in Washington, the Producers' Council, an organization of producers and manufacturers of building materials and equipment, listened to a stirring address by Alexander B. Trowbridge, president of the Washington Chapter of the American Institute of Architects. F.W. Morse of New York, made his annual report as president of the Council. Other reports received were those of Treasurer A. B. Tibbets of New York and Executive Secretary H. H. Sherman of New York. The report of the Council to the Institute Board of Directors was made by William M. Crano, Jr., of New York, and of the Structural Service Committee, by F. Leo Smith of Washington.

Housing, activities of the Construction League of the United States, and the public buildings program came up for discussion at a later session. The Council's annual dinner was addressed by Senator Robert M. La Follette on "Public Works Legislation," and Horace Russell, general counsel of the Home Owners Loan Corporation, on "Home Renovizing and Home Building Plan."

WINNERS OF LOS ANGELES MOUNTAIN CABIN COMPETITION

SEVENTY-FIVE designs were submitted in the recent competition for a mountain cabin, conducted by the Architects Building Material Exhibit of Los Angeles for the Hammond Lumber Company of that city. The majority were of such a high standard of design and offered such interesting solutions to the problem set forth in the rules, that the jury was in session the better part of a day before its decision was made.

The entire group of designs, including the prize winners and honorable mentions, have been placed on display in the Architects Building Material Exhibit, Fifth and Figueroa Streets, Los Angeles. where they will remain until September first.

The jury made the following awards:

First prize, $125.00 — Samuel E. Lunden, architect

Second prize, $50.00—Douglas McLellan, architect

Third prize, $25.00—C. Roderick Spencer, architect

Honorable mention: Arthur Hutchason, Irene McFaul, and George Adams

The jury was composed of Mrs. Walter F. Malone, State Chairman of American Home Division of California Federation of Women's Clubs; Miss M. L. Schmidt, manager of the Architects Building Material Exhibit; Sumner M. Spaulding, Gordon B. Kaufmann and H. Roy Kelley, architects.

The report of the jury stated: "In awarding the prizes for the architectural competition for mountain cabins, our decision was based upon ingenuity of plan, together with architectural correctness and the possibility of construction within the limitations of price as set out in the program. All the designs submitted were within the required area but many were too elaborate for the amount specified. In the opinion of the jury, mountains within eighty-five miles of Los Angeles do not have a snow load of sufficient weight to make a steep roof necessary."

THE PROGRAM

Problem—Mountain Cabin

At a mountain resort, eighty miles from Los Angeles, a young couple plan to build a week end cabin, as a place to entertain a few of their friends. A level lot 60x150 feet, with a number of tall pines at the rear has been selected. The lot faces the East and the only view is in this direction, which faces over the broad valley miles away.

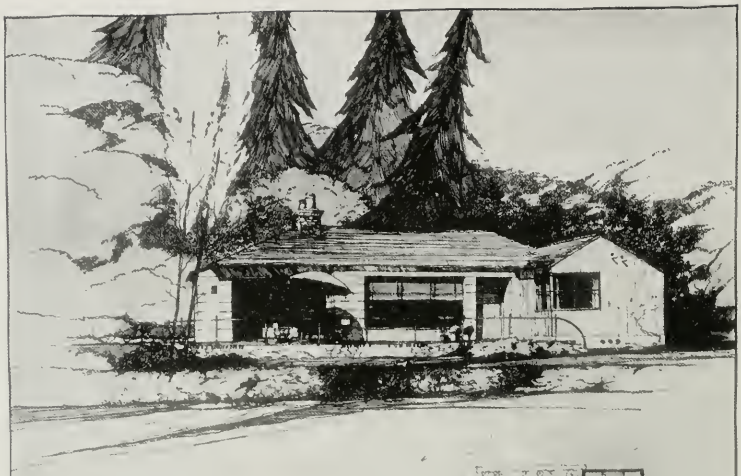
Due to the limited financial circumstances of this young couple, the area of the cabin is limited to 900 square feet. It shall contain a kitchen, not too large, with cupboards and storage spaces, a small bath with shower, and one or two small bedrooms. The suggested cost is not to exceed $1500.

Drawings Required

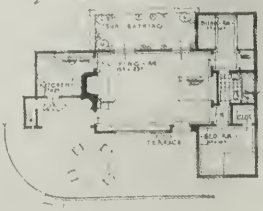
1. Floor plan at scale of ⅛" equals one foot.
2. Perspective of exterior at approximately ¼" scale.
3. A smaller Perspective of the Fireplace End of Living Room.

Method of Presenting

1. All drawings shall be presented in black and white on white illustration board mount, 20"x30", so that all drawings may be hung vertically.
2. The following title shall be printed in a 1½" band at bottom of drawing—A Competition by the Architects Building Material Exhibit for the Hammond Lumber Company.
3. The building shall be of redwood construction with shake or shingle roof.
4. The name of the competitor shall not appear on the face of the mount but shall have the name and address affixed to the back of the design and covered with a non-transparent paper over the information thus given.

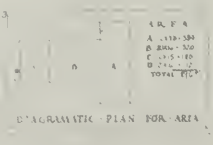


PERSPECTIVE · · ·
OF · THE · EAST · ELEVATION



· PLOOR · PLAN ·

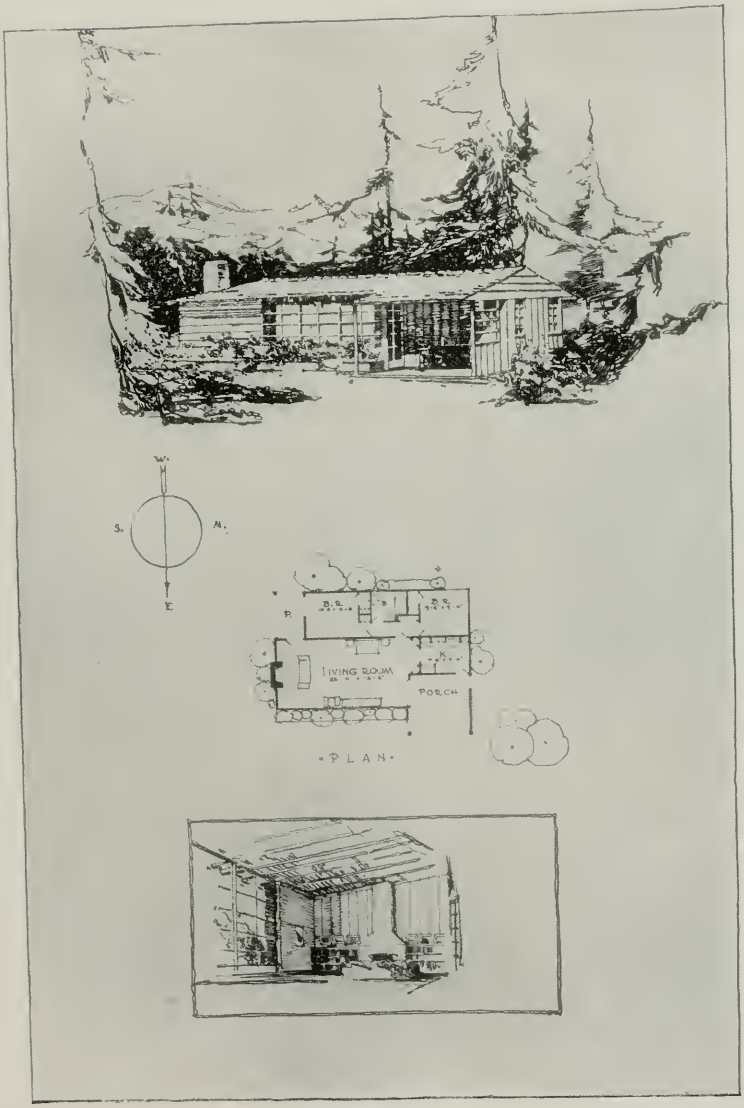
PERSPECTIVE OF THE · FIRE-
PLACE · END · OF · LIVING · ROOM ·



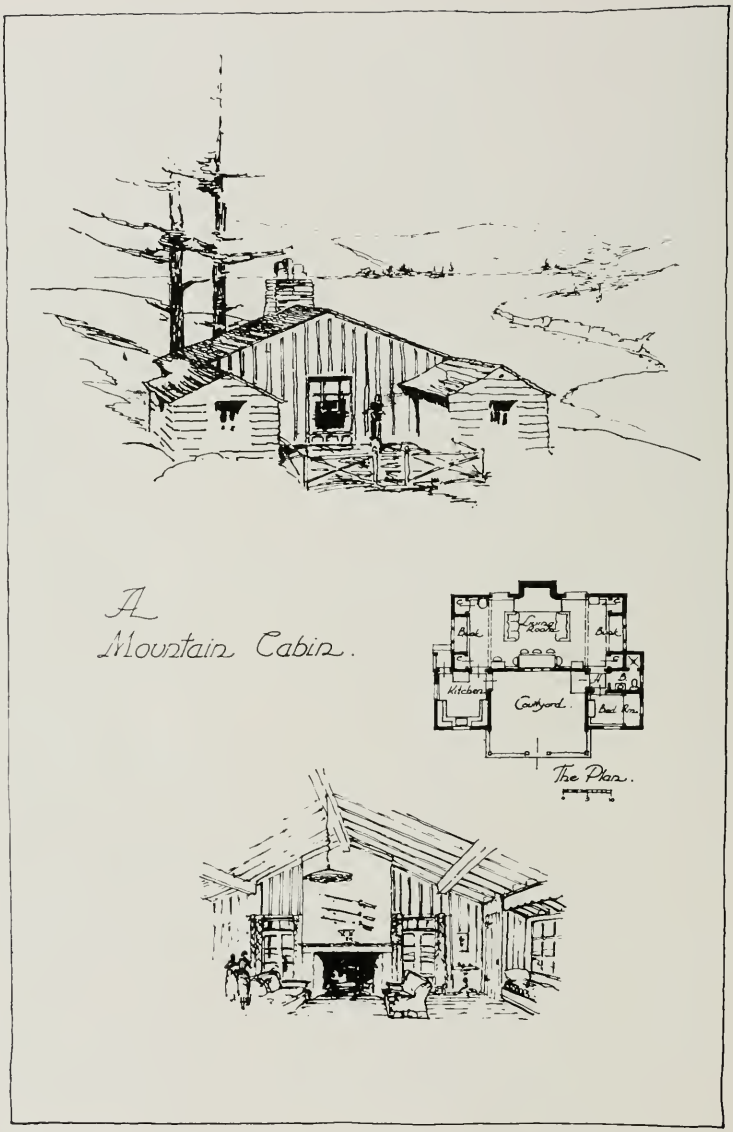
DIAGRAMATIC · PLAN FOR · AREA

A
· MOUNTAIN ·
· CABIN · · ·

A MOUNTAIN CABIN. AWARDED FIRST PRIZE
SAMUEL E. LUNDEN, ARCHITECT



A MOUNTAIN CABIN. AWARDED SECOND PRIZE
DOUGLAS McLELLAN, ARCHITECT



A MOUNTAIN CABIN. AWARDED THIRD PRIZE

C. RODERICK SPENCER, ARCHITECT

COFFEE SHOP AT 111 SUTTER STREET, SAN FRANCISCO
Wm. Clement Ambrose, Architect

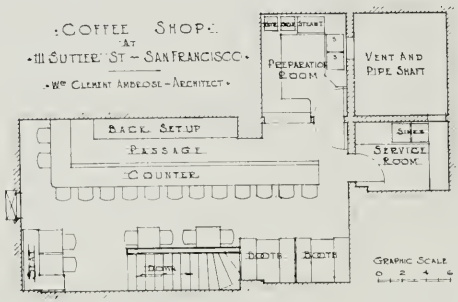
HIGH CEILING STORE CONVERTED INTO PROFITABLE COFFEE SHOP

TO establish another coffee shop in the already well supplied Montgomery Street district of San Francisco during the depths of 1933 did not seem, to some critics, to be good business judgment.

But the lessee of the cigar store and the manager of 111 Sutter Street believed that more profitable use could be made of the high ceiling space over the cigar store and over an adjoining hallway, so they called in their architect, W. C. Ambrose, who developed a very satisfactory lay-out for the promotors. The ceiling height proved to be ample for a mezzanine, a clever little stair was provided for access to it, and in a few weeks there was opened one of the most attractive coffee shops in the city.

Walls of light colored wood were given sparkle by polished aluminum mouldings, and for contrast the architect specified black micarta baseboards and table tops. The ventilation was designed on the theory that the patrons should be given all the fresh air they could stand without drafts, rather than for minimum requirements.

Before the project was commenced, careful studies were made of costs of operation and minimum daily receipts necessary for success. That courage and careful planning are rewarded in hard times, as well as in good times, was demonstrated by the fact that from the first the venture was successful, and receipts soon more than doubled the minimum required for profitable operation.



PLAN, COFFEE SHOP, 111 SUTTER STREET, SAN FRANCISCO
Wm. Clement Ambrose, Architect

THE LION WITHOUT THE GATES OF THE INSTITUTE DE FRANCE, PARIS
See Page 23

A CASE PICTURE OF HOUSING IN A SLUMLESS CITY

by
CARL F. GROMME

SOME twenty odd years ago the San Francisco Housing Association was formed by a group of citizens of San Francisco who perceived that conditions closely resembling the worst kind of tenements were rapidly multiplying in various parts of their city. Large areas had recently been burned to the ground in the great disaster of 1906. In the rush of rebuilding which followed, structures without number were erected which violated all rules of decent housing. The members of this Association set themselves to the task of bringing to the public eye the fact that these conditions were existing and increasing. Many corrections were instituted and noteworthy among them was the fostering of the new tenement house law which was passed by the State Legislature in 1911. This law is now superseded by the State Housing Act of California, effective August 1929.

During the latter months of the year 1933 the San Francisco Housing Association realized that the program of the present administration in Washington as regards housing, particularly slum clearing and low cost housing, offered an opportunity for someone to perform a great service to the City of San Francisco. Since little or no new coordinated data regarding housing conditions was available this Association decided to begin a survey of the city, particularly those parts which indicated that the degree of decrepitude or obsolescence was marked and in which people were living under adverse conditions.

Valuable Data Destroyed

There is an area lying near the civic center roughly a mile wide and a mile and a half long which came under scrutiny as being a fertile field for investigations. It is here that the recent survey work has been carried out. This section of the city was spared during the fire of 1906, Van Ness Avenue marking the western limit of the fire in that district. So here are buildings which for the greater part cannot be described as hurried structures built to take care of a population suddenly homeless. Since the city hall was completely destroyed with all its records, we have little or no exact information as to the true dates of the origin of these buildings. From various owners of these properties we find that there is at least one house which dates from 1868. That is a ripe old age for San Francisco. Not infrequently we find 1872 or 3 given, more often 1886 or 8 while perhaps the greatest numbers can claim the nineties as the period of their origin.

These were the homes of many of the solid citizens. It is indeed a very desirable part of the city to live in for it is close to the park, readily accessible to the down-

A paper read at the Western Conference on Government, University of California, Berkeley.

town districts and is an area with a delightful climate, having relatively little fog or wind. The popular taste expressed by those buildings is that of course of the period, the jigsaw creations and catalogue ornamentations were used to perhaps no greater extent than in other places. Three very predominant characteristics which hardly anywhere fail to make themselves felt are the universal use of wood, the ubiquitous bay window and the flight of steps leading to the level of the front door. This last condition has furnished many a house with a more or less high basement which has subsequently found a tenant who was not particular about light and air. Then, as today, it was the street facade which made a brave showing, the rear having no further function than of giving a wall to keep the weather out or to hang a porch on.

As inspection of almost any block in this square mile and a half will show there is scarcely a break in the solid ranks of facades. This however, does not reveal a condition that is particularly unique, but is the characteristic result of using land to so-called greatest advantage, whatever the attendant factors may have been. Here throughout is presented an exterior picture of structures giving a story of shabby gentility, of having seen better days, and many frankly without this. During the course of the past ten years there have been, here and there, those who were hardy enough to refurnish the interior of one of these houses, or add a coat of plaster to the street front in the fond hope that distinction among drab neighbors would be an attraction. That there are those, who through a lifetime of saving have acquired a home, express a pride in ownership by decent maintenance is not to be denied. They are by far the minority. Throughout all this area there is a great scattering of small shops and neighborhood stores each almost inevitably in the lowest story of some building housing one or more families. In itself this may constitute no critcism save that under the conditions this usually means no free space whatever on the lot.

Too Many Court Windows

A glance at the building arrangements in this area will reveal at once that the predominant shape is the long and narrow. This means that, save in the corner buildings, no rooms get a free exposure except those on the street front which are seldom more than two in number per floor, and those at the back when the proximity of another building or porch does not prevent. Courts of all shapes and sizes were resorted to to give that modicum of light and air which was considered as adequate. It is safe to say that forty percent of the windows of a typical block open onto some court or light shaft which is more than likely long, narrow and open to only a small patch of sky.

In general the city blocks here measure two hundred and seventy-five feet long by four hundred and twelve feet six inches wide. This means that where no secondary street cuts the block in two halves there is an area of two and six tenths acres and where such a secondary street occurs the block is reduced by one third of an acre. On these rectangular areas there have been placed from twenty-eight to fifty buildings intended for living purposes, the average number being about thirty-five. It is significant that where a block is cut by a secondary street that here is found the greatest congestion, since a back yard facing a street offered a wonderful opportunity to add another house. Yard space, evidently was considered a rank superfluity. When the actual free area was calculated it was revealed that as little as from nineteen percent to twenty-five percent was devoted to

yards and courts. This inclusion of the courts in the figuring necessarily favors the situation because a great number serving to furnish light and ventilation do not in any way contribute to the true free space in the group at large.

A recording of one specific block which is more or less typical of the conditions shows the following: As a whole seventy-nine per cent of the ground is built upon, but of the forty-five buildings, all of which are dwellings of one type or another, forty-nine percent occupy over eighty-five percent of the lot and on the basis of the persons now living there, we find that each could be said to have an allotment of twenty-four square feet of open space. Even this percentage of so called free area is so inevitably cut up into small units by myriads of wooden fences, high and often rickety with never a hint of paint, that another name should be coined in place of free. Here and there a small attempt at gardening will offer a relieving note among surroundings chiefly marked by accumulations of rubbish of all sorts, rusting wrecks of automobiles, old bedsteads, trash heaps or at best simple neglect.

Sixty-Seven Per Cent Rented Homes

An analysis of the ownerships and tenancy of the properties on three blocks taken from this section at random shows that eight per cent have the owners as sole occupants. Twenty-five per cent are occupied by the owner and tenants who rent apartments or flats, while sixty-seven per cent are rented entirely; indicating clearly how small the home owning group actually is. For the most part it is the rented buildings which show the greatest degree of decrepitude. By way of comparison it was found that forty-five per cent of all properties are owned by women, thirty per cent by men, twenty-two per cent by men and women jointly, and three percent by companies or institutions.

A tabulation of the actual known number of persons living in four of these blocks reveals an average population density of one hundred and sixty people per acre, the lowest being one hundred and twenty, the highest being one hundred and ninety-four. This number may or may not be ordinarily significant but does become so when it is seen that the buildings are only two or three stories high. If the total number of family accommodations were utilized this percentage would be higher for between ten and fifteen percent are vacant. The number of persons per block ranges from three hundred and fourteen to four hundred and fifty-eight as taken from the four mentioned. Of a total of sixteen hundred persons one hundred and eighty are children under twelve years of age.

Although San Francisco has fairly clearly defined racial districts this one, except for a part not included in this discussion, has an intermingling of all races with white people by far in preponderance. One block which has four hundred and fifty-eight persons is eight percent white, eight and a half percent negro, five and one-half percent Mexican, five percent Filipino and under one percent Japanese. The children of racial intermarriages are not included in the figures.

The sixteen hundred persons mentioned earlier constitute about five hundred and ten families which are divided approximately as follows: forty percent one person, twenty percent two persons, twenty percent three to 5 persons with the balance in families of six and over. These families are housed in accommodations of various numbers of rooms in the following proportions: between forty and fifty percent in one room, fifteen and twenty percent in two

rooms, ten and fifteen percent in three rooms with others from four to seven rooms in fairly equal rations. A check up of the occupations of the heads of the families shows no preponderance of any one kind, the variety is great. In the same building may be found a baker, stevedore, porter, machinist and a clerk. "C.W.A." and unemployed were the two responses to the query which appear more repeatedly than any other.

Average Rental 4.60 Per Room

Over an area of four blocks that are made up to the greatest by flats and apartments it is found that the average rental per family accommodation is twenty-eight dollars and eighty-five cents per month with the rental per room averaging four dollars and sixty cents. These figures are based on the rentals stated as being currently collected, when collections are possible. While conclusive information is not available, tales of long arrears in rent payment are relatively frequent. Still on the basis of doubling the city tax assessment against land and buildings in order to arrive at a probable market value, the income from properties in a congested block amounts to a return, after taxation, of eight and a half, ten, twelve and a half, and even seventeen percent. The greater part of the houses rely upon kerosene stoves or a coal range in the kitchen for heat. Out of sixty-four, two have steam heat, four have gas heaters of the circulating type, ten have fireplaces using coal or gas, the remainder have coal ranges or kerosene stoves or nothing at all.

No sweeping statement that these houses are uniformly unfit for habitation would be true. San Francisco's having an active and efficient department of public health is through its "Housing Division" enforcing the provisions of the "Housing Act" and is keeping at least to within legal limit conditions which would otherwise become intolerable. The fact that the law is not retroactive makes the situation more difficult. That there are many undesirable buildings will be illustrated by a few descriptions of existing conditions. A two flat building having two stories and a basement has in it twenty-one people who live in one room apartments, so called. All cooking is done on a gas plate in the one room which serves as living and bedroom. This place will, in some cases, be tucked in a closet, sometimes not; the original kitchens of the flats furnish now the community sinks. There are three toilets for the use of these twenty-one persons. Another which had three flats originally, now houses twenty-four persons as roomers, the plumbing consisting of one bath tub and two toilets and sinks. One six room flat containing a family of three adults has four rooms so dark that they require the constant use of artificial light. A few excerpts from the reports turned in read as follows: house badly dilapidated with a leaking roof, a filthy yard, has in it fourteen adults and two children. Another, two community kitchens for fifteen people living in a twelve room house. Again — garbage is kept in bathrooms, removed once a week. One old building, the first story of which is used for a commercial purpose of uncertain kind, has four apartments on the second floor. A narrow stairway leads to a rickety boardwalk around a skylight at the second floor level of an inside court. Each apartment is entered solely from this walkway. At the time of inspection the skylight drain, stopped up by refuse, caused rainwater to back into the dingy apartments via the gap at the door sill.

TERMITES AND TERMITE CONTROL

by
A. A. BROWN, Consulting Engineer

A SACRAMENTO correspondent writes: "Why do you object to the use of arsenic for ground treatments? What do you recommend instead of arsenic? Please give us all information as to the use of ground poisons for keeping out termites."

A San Francisco home owner says: "I used redwood for the foundation timbers in my home. I now find the redwood badly eaten by termites. I was told that termites would not eat it and that the wood will not decay."

* * *

Answering the first inquiry: The Termite Investigations Committee "recommends that arsenical preservatives be not used in the treatment of wood, wallboard, building paper, or other material used in dwellings or structures accessible to man, or in or on soil underneath such structures, as a treatment against termites. The arsenic compounds used as preservatives are all highly toxic to man and also present a toxic fume hazard in case of fire. Furthermore, termites and their burrows are universally infested by fungi, including many common molds. Fungi are also abundant in the soil in which termites live. A number of these fungi turn arsenical compounds into a volatile form, which diffuses through the air and slowly poisons persons breathing it."

Professor Charles A. Kofoid, writing under date of May 10, 1934 says: "Evidence accumulated since the publication of our termite book shows clearly that termite burrows are regularly and freqently infested by molds growing in the immediate wall of the burrow, some of which later result in the dry rot which occurs in termite burrows, especially in the case of the subterranean and rotten-wood termite. Careful micro-chemical tests show that termites are dependent upon these molds for their proteins, and that they cannot successfully live upon wood without fungi therein.

"The number of fungi which convert arsenic in its various forms into volatile and highly poisonous arsine is considerable, and investigation tends to increase our knowledge of the number of fungi known to be capable of producing arsine. Electrolysis attendant upon leaking plumbing and fire may also produce arsine from arsenic treated building materials. This arsine can be detected when it is present in some quantity by its garlic-like odor. This odor pervades the testing ground where the international tests are being made at Panama, in which certain arsenic - treated materials are under test.

Arsenic Not Fatal to Fungi

"Manufacturers of arsenic preservatives have maintained that the arsenic treated material would kill the termites and therefore the fungi would not be introduc-

ed. This is biologically wholly incorrect. Termites carry the spores of fungi on their bodies and in their pellets, and these spores are distributed throughout their burrows. It would be absolutely certain that contact with building materials treated with arsenic, by termites visiting their surfaces would amply suffice to inoculate the material with fungus spores. Fungi use the arsenic in their metabolism and the by-product is the arsine."

Earth-dwelling termites are of several different types, and the group that is most economically important is known as subterranean termites. They live in the earth and feed upon wood placed in or near the ground. They are widespread and responsible for by far the greater part of the damage done. Ground treatments should be considered as an adjunct to proper construction for preventing damage by subterranean termites.

The present theory of ground treatments involves the formation of a soil layer impervious to termites. An effective treatment may be toxic, distasteful, or repellent to prevent penetration of the treated layer of soil by the insects. Such a layer of soil must be thick enough so that it will not be broken through by ordinary disturbances or by the attempts of termites to penetrate it; in fact, the thickness of the soil layer seems to be of more importance than the percentage of poison in the treating solution. Consequently, large quantities of treating solution should be used if an effective ground treatment is to be obtained. Ground treatments not only insulate structure to be protected from the termites deep in the soil, but they poison or make distasteful the small scraps of wood in the upper layers of soil.

To be effective, a ground treatment must be reasonably permanent. This prohibits the use of highly volatile chemicals. Conditions found under the majority of houses investigated show that the ground is usually dry, and this allows the use of water-soluble chemicals with a reasonable assurance of permanence. The water soluble treatments should last indefinitely if there is no washing out of the ground by drainage or by a high water table. Where the ground treatment would be subject to leaching the protective layer can be created by using a crude creosote oil where the color, oiliness, and odor are not objectionable, or where these properties of the crude creosote are undesirable, then the refined product, marketed under a trade name can be used.

The Termite Committee has found that a 10% solution of Sodium Fluorosilicate, Magnesium Fluorosilicate, copper sulphate, or Borax will prove effective provided they are used generously. The thicker the protective coating of treated soil, the more lasting will be the results. All of these latter materials, except the creosote, are water soluble.

Termites and Redwood

Answering question number two: The Termite Investigations Committe was confronted with the fact that certain pieces of heart redwood had resisted decay and termite attack for considerable periods of time and other pieces of heart redwood had a comparatively short service life. Under laboratory conditions there was a wide variation of resistance of redwood to termite attack. Commenting upon these tests Professor Charles A. Kofoid says:

"The tests indicate a varying amplitude of range in termite resistance within each species and considerable uniformity within a single board. Our tests show that the capacity of wood to resist termite attack was in general the greatest in those blocks having a high percentgae of extractive, and lowest in those blocks containing the low percentages.

"The amount of extractive in any species which results in its durability is not the same for all species. The hot-water-soluble extractive in redwood has been found to range from 5.45 to 28.23 per cent of the dry weight of the wood." (See Fig. 1.)

These tests led Professor Kofoid to the following conclusions:

"(1) Large amounts of extractive are directly correlated with a high death rate of termites, lessened excavation, more termites leaving the block, and heavier destruction of the Protozoa.

"(2) The smaller amounts of extractive are associated with lower death rate, more excavation, less migration, and little if any destruction of the Protozoa.

"(3) Redwood containing hot-water extractive in amounts above about 12 per cent by dry weight of the wood is toxic to the Protozoa in 60 days or less.

"(4) Redwood containing hot-water extractive in amounts below about 12 per cent is not lethal to the Protozoa in 60 days.

"(5) These differences in the amounts of the extractive, or of some definite chemical substance or substances of the wood and in the extractives, may account for the resistivity of redwood to termite attack when the extractive is abundant, and for the failure to resist when it is not abundant. The line of separation between these two conditions probably lies near 12 per cent. . . . . Presumably, wood containing not less than 12 per cent of extractive is adequately termite - resistant when and so long as it contains this amount of the hot-water soluble extractive."

Sherrard* and Kurth say: "Studies at the Forest Products Laboratory on virgin redwood have demonstrated a clearly defined variation in extractive content of the heartwood with height in tree and with position in cross section of the trunk. Similar studies on young, second-growth redwood have revealed that, although a corresponding variation in the extractive is usually perceptible, the tendency is toward a more uniform distribution. In virgin-growth trees the aqueous extractive is highest in the heartwood adjoining the sapwood of the butt and decreases toward the center of the cross section. In the outside heartwood there is a gradual decrease of extractive with increase in height of the tree; at the center it increases until near the top a point is reached at which the concentration is almost uniform throughout the cross section of the trunk. Both the cold-water extract and the hot-water extract show the same relative distribution throughout the trunk, although the values for the cold water extract are of smaller magnitude. Wherever compression wood is encountered, the extractive content is abnormally low.

"The average hot-water extractive content of seven second-growth redwood trees, varying in age from 45 to 64 years, was found for sapwood to be 3.2 per cent at the 1-foot height, 2.6 per cent at the 35-foot height, and 2.8 per cent at the top of the trunk; for heartwood the values 12.3, 10.1, and 11.2 per cent were obtained for the respective heights.

"The distribution of extractive in virgin-growth redwood is represented graphically in Fig. 1. This graph presents the amounts of hot-water extractive throughout cross

*E. C. Sherrard, Ph. D., Principal Chemist in charge of section of Derived Products, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wisconsin; E. F. Kurth, M.S., Junior Chemist, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wisconsin, joint authors of a chapter entitled "Distribution of Extractive in Redwood, Its Relation to Durability," to be found in the final report of the Termite Investigations Committee, "Termites and Termite Control", University of California Press, Professor Charles A. Kofoid, Editor-in-Chief.

sections taken from six heights in a tree. The amount of extractive in sapwood as shown by the points at the extreme left is much smaller than in the heartwood immediately adjacent. . . . It appears, therefore,

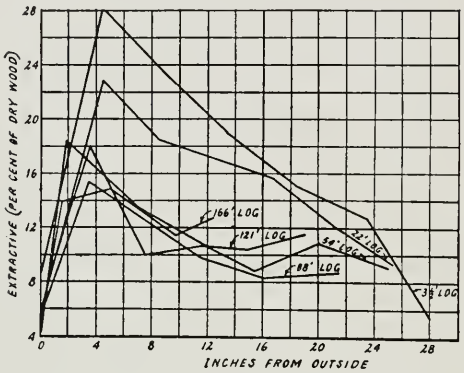


FIG. 1—DISTRIBUTION OF EXTRACTIVE IN REDWOOD. CHART BY SHERRARD AND KURTH.

that the durability of redwood will vary with the extractive distribution; the most durable redwood should be the heartwood of the butt log nearest the sapwood, the susceptibility to decay increasing toward the pith of the tree and toward the top. . . . The durability of redwood is attributed to the nature of the extractive and varies with the extractive distribution."

Redwood 100 Per Cent Destroyed

The termite tests made upon samples of redwood by the Forest Products Institute of the Union of South Africa, Pretoria, further confirms the wide variance in resisting termite attack. These tests were made upon samples of redwood supplied by the Pacific Lumber Company of San Francisco and W. F. Johnstone & Company. They show considerable activity of termites in the interval between May 19, 1931 and October 13, 1933; activity in all samples of redwood ranges from 20 per cent destruction to 100 per cent. (See Table 1).

Under the grading rules of the California Redwood Association dated March 26. 1934, when sap wood is eliminated all No. 1 Heart Common may be marked "Foundation" in addition to the No. 1 Heart Common mark.

The redwood lumber interests at present segregate the heartwood from sapwood in their grading rules but do not make any distinction between the heartwood containing large percentages of the natural preservative and that containing a relatively small percentage The Termite Investigations Committee has considered the use of

[Please turn to Page 45, Column 2]

COMPLETE DESTRUCTION OF REDWOOD BY TERMITES

Pienaars River **Experiment No. 18** **Started May 19, 1931**

Materials: Two samples (073A, 073B) 2"x2¾"x18" of Sequoia sempervirens (redwood) supplied by Messrs. W. F. Johnstone & Co. Ltd., Ref. 1296 R8570, October 13, 1930. Six samples (074A, B, C, D, E, F) 2"x2"x12" of redwood supplied by The Pacific Lumber Co., San Francisco.

Position: Buried in trench 6" deep 6 feet east of telephone pole No. 2 running 30 feet east.

Botanical Name	*Common name*	*Mark*	*Buried*	*Inspections*			
				9-12-31	8-6-32	1-3-33	13-10-33
Sequoia sempervirens	Redwood	073 A	19-5-31	5% eaten	Only label left		
do.	do.	073 B	do.	Groove	90% destroyed		
do.	do.	074 A	do.	Groove	5% ants	15% ants	25% ants
do.	do.	074 B	do.	do.	do.	20% ants	20% ants
do.	do.	074 C	do.	do.	do.	20% ants	25% ants
do.	do.	074 D	do.	Rasp	do.	do.	20% ants
do.	do.	074 E	do.	Groove	10% ants	25% ants	30% ants
do.	do.	074 F	do.	do.	15% Ants	30% ants	35% ants

RADICAL CHANGE IN ARCHITECTURE PICTURED FOR NEXT GENERATION

by
ALVO R. WILLMAN

THE "City of the Future" was depicted in a twentieth anniversary exhibition commemorating the founding of the School of Architecture at the University of Washington, in an interesting collection of contemporary student work in the Henry gallery on the University campus.

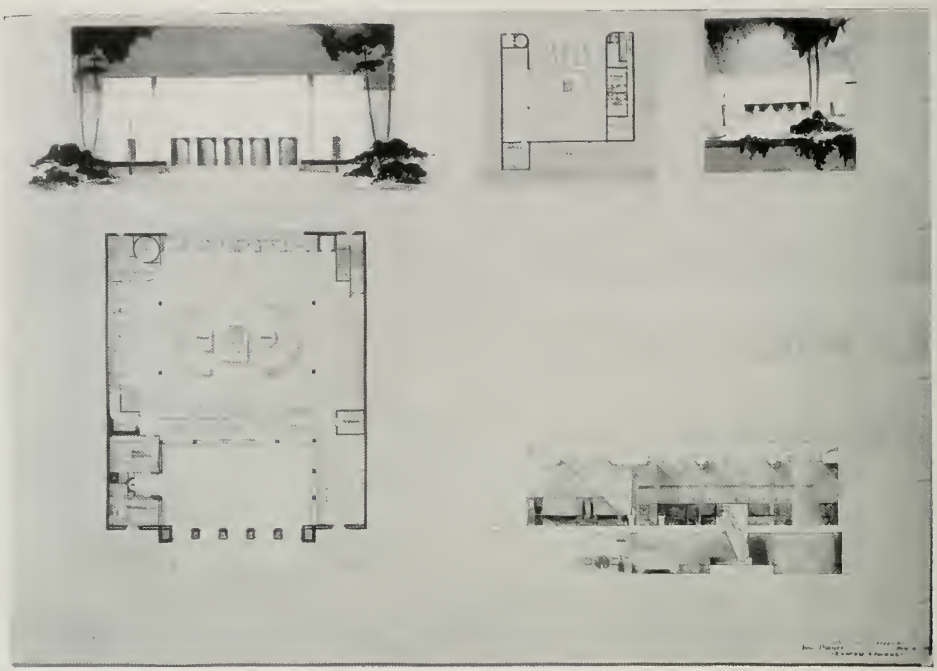
Steel, glass, and concrete—materials of modern construction, are aesthetically blended in a future architecture, not completely harmonious with the much-debated factory-type International Style, and not an offspring of the bizarre Chicago Exposition.

The new architecture will conform to and flourish in a world changed by scientific advancement and social reorganization. It is considered safe to predict its thorough application during the next building era, for the new architecture has been developed to a usable stage by American schools of architecture and allied influences.

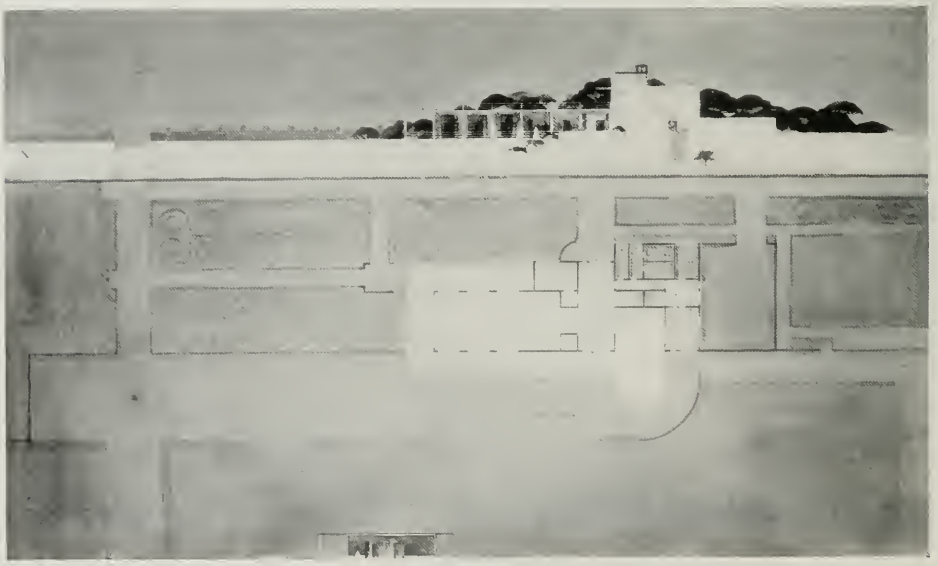
This new architecture does not aim to blanket several styles, such as Gothic, Renaissance, and Greek on buildings similar in function and character, but to express logically these essentials through use of appropriate materials assembled with a regard for Classic proportion.

SOPHOMORE PROBLEM, "A GEORGIAN DOORWAY," BY ELMER SANDERS

The history of the School of Architecture at the University of Washington dates from 1914, when it was established through the efforts of Dean I. M. Glen of the College of Fine Arts. Carl F. Gould was departmental head when the school was first opened in a room backstage of Meany Hall. Inter-



JUNIOR PROBLEM, "A POST OFFICE," BY ELMER OMDAL



JUNIOR PROBLEM, "A YACHT CLUB," BY BJARNE OLSON

mittent shiftings have finally landed the architecture department in its own building where it early won membership in the Association of Collegiate Schools of Architecture and acquired full recognition as a five-year professional school.

The teaching system followed was evolved from one begun in the time of Louis XIV, adopted by the Society of Beaux Arts Architects in New York and variously adapted by major schools of architecture in this country. Essentially it is the programme and esquisse system, which requires throughout the development of the problem, adherence to an original general scheme, the "esquisse," created by the student, without research or assistance, from a programme of requirements. Problems generally are from four to six weeks long. During this period of development, the student receives personal criticism from his critic two or three times each week. The department has its own library of architectural volumes and valuable plates, supplemented by a growing collection of the best recent publications and current periodicals and approximately 6000 slides.

A formal banquet in the Architecture Building and a pre-view in the Henry art gallery preceded the public opening of the exhibition. Professor Harlan Thomas, head of the school, represented the faculty as toastmaster. Robert F. McClelland, President of the Washington State Chapter of the American Institute of Architects, gave the opening address. Carl F. Gould, first head of the department, was also a speaker. An allegorical opera, "Downfall of Decadence," proved a fitting climax to the festivities.

SAN JUAN MISSION

[Concluded from Page 12]

The upper story of the Zanetta House which was the home of the inn-keeper, Angelo Zanetta, was used as a hall where many noted gatherings were held, the most famous being a meeting in 1870 between Stanford, Crocker and Huntington and the citizens of San Juan wherein the town was "blotted off" the map by the extension of the Southern Pacific Railway leaving San Juan "off the line".

The re-routing of the Coast Highway in the interest of progress and speed has again left little San Juan "off the line". However, there is no fear that it will not be found by those who seek charm and beauty of old places or by those who respond to the gayety and color of its fiestas and pageants.

TERMITES AND TERMITE CONTROL

[Concluded from Page 42]

redwood as a retardent rather than a measure to prevent termite damage, largely due to the fact that the highest quality of resistant heart redwood is not segregated from other heart redwood which does not have the resistant qualities.

The tests mentioned above provided a rational answer to the wide variations in behavior of seemingly similar material and led these investigators to the conclusion that heart-redwood was a variable product in its termite and decay resisting qualities and therefore should be purchased under a specification subject to laboratory approval as is done with other construction materials, such as steel, cement, creosoted lumber, etc. With the aid of laboratory tests it should be possible to obtain heart-redwood of a durable quality containing high percentages of the hot-water-extractive.

Photo Standard Oil Company

MARIN TOWER (736 FEET HIGH) GOLDEN GATE BRIDGE

PYLON S 1, FORT POINT, SAN FRANCISCO. MARIN TOWER IN THE DISTANCE

GOLDEN GATE BRIDGE FAST REACHING SPECTACULAR STAGE

MORE than 1,000 men have been employed steadily the past month on the construction of the Golden Gate Bridge. This army of workers was divided between actual field operation, the quarries that are supplying crushed rock and gravel for the project, steel and rivet plants, cement manufacturing plants, steel fabricating plants and the transportation of material.

In the plant of the Moore Drydock company, on Oakland estuary, three shifts of men are working 24 hours a day to keep up with the demand for steel fender forms for the protective fender of the south pier.

The first construction stage of concreting the south pier fender is approximately 30 per cent complete with eight of the 22 fender sections concreted to a point 40 feet below sea level and raised above the surface in steel frames extending 25 feet above sea level.

The Pacific Bridge company, contractor for the pier and fenders, is ahead of schedule on this difficult piece of work, with 30,000 tons of concrete, or more than half as

much as the entire Marin pier embodies, in place and furnishing an ample support to resist the strong tidal current off Fort Point.

Similarly work on the Marina approach road is progressing rapidly and motorists driving through the Presidio may now see the tremendous steps that have been taken on this phase of the bridge construction.

On the high viaduct of this approach concrete bents and a number of the piers for the steel spans have been completed at the westerly end. An additional fund of $200,000 has been alloted by the Board of Directors of the Golden Gate Bridge and Highway District to speed this work and at the same time provide employment for a large number of men.

Riveting of the Marin tower is now 83 per cent complete and the first field coat of paint has been almost entirely applied. The stainless steel portal enclosures for the cross struts are being added.

Total steel placed in the tower to date amounts to over 20,000 tons.

Work on Pylon S-1, fronting Fort Winfield Scott, is continuing with the contractor building forms and setting reinforcement steel for that portion of the concrete which will imbed the anchorage steel members.

Recent bond sales at a favorable price have netted the district ample funds to speed construction on various units of the project, which can be started before the spinning of the cables.

Three quarters of a million dollars has been alloted for military replacements in the Presidio as well as for work on the anchorage housing at Fort Point and approach structures.

It is estimated that expenditures for the remainder of the year in the field and shops will amount to nearly $3,750,000.

The following table prepared by the cost and progress division of the Golden Gate Bridge and Highway District as of April 30, will furnish a graphic idea of the progress of the Golden Gate Bridge, showing the percentages of completion of the several units of the structure.

Anchorage Steel (both sides in place) 84%
Steel Tower (San Francisco) in shops 36.2%
Steel Tower (Marin) in place 95.6%
Bridge Wire, Handrope and Fittings in shops 32.3%
Pier Excavations (San Francisco) 96%
Fender (San Francisco) in place 7.7%
Pier and Caisson (San Francisco 18.7%
Pier (Marin) Completed
Excavation (San Francisco) 92.5%
Anchorage (San Francisco) Concrete in place 78.2%
Cable Housing & Tower Footing, S3, S4 (S.F.) Not started
Pylon S-1, Concrete in place 74.25%
Pylon S-2 Not started
Approach Span Footings, S7 and S8 (San Francisco) Not Started
Abutment (San Francisco) Not Started
Seawall (San Francisco) Completed
Excavation (Marin) 96.0%
Anchorage (Marin) Concrete in place 82.2%
Cable Housing and Pylon N-2 (Marin) Not Started
Pylon N-1 (Marin) Concrete in place 90.0%
Approach Span Footings No. 2-10 (Marin) Not Started
Abutment (Marin) Not Started
High Viaduct, Concrete in Place 4.21%

CONCRETE SHELL CONSTRUCTION FOR MODERN DAIRY BARN

FOR the first time in this country the Zeiss-Dywidag System of shell roof construction is used on a farm building. Brook Hill Farm of Genesee Depot, Wisconsin, in cooperation with Starline Inc., of Harvard, Ill., used this type of roof construction on the stable portion of a $75,000 exhibition building at the Chicago World's Fair. A herd of 30 pure bred Wisconsin cows, housed in the stable, will produce certified vitamin D milk which the public will see as it passes from cow to bottle.

The Zeiss-Dywidag System originated in Germany and is practical for roofing structures where a large area of unobstructed floor space is required.

Designers of farm buildings will welcome the opportunity to observe this structure and judge the merits of the system. The Zeiss-Dywidag System can be adapted with economy to many buildings which require a large, unobstructed area of floor space.

The barn has an overall dimension of 36 ft. x 72 ft. Walls are made of 8 in. x 12 in. x 16 in. Haydite concrete masonry units. The roof consists of five double-curved barrels. Each barrel is 14 ft. x 34 ft. Stiffening diaphragms in the gables and edge beams transfer the roof load from the shell to the supporting walls.

UNDERSIDE OF FORMS, SHOWING CURVED STEEL RIBS RESTING ON CURVED BEAMS—SHEATHING BOARDS—AND PLYWOOD SHEETS.

Forms

Special steel forms were built for the job and may be used repeatedly in similar buildings. The forms for the barrels are supported by a series of curved steel ribs with tension rods made adjustable by turn buckles. They were spaced 3 ft. 6 in. apart and were fastened at their ends to a curved steel beam running the length of the barrel section, which was required by the double curvature of the barrels. Sheathing spaced about 4 in. apart was laid over

the steel ribs. Then sheets of plywood were laid over the sheathing and securely fastened. This operation completed the forms for three barrels.

When the concrete had gained sufficient strength the forms were stripped and two sets re-erected for the remaining barrels. By this procedure it is possible to complete a building of any size simply by shifting forms to other sections as units are finished.

EXTERIOR VIEW OF REAR OR LAKE SIDE. NOTE STEEL GABLE FORMS. DOUBLE CURVE IS PLAINLY VISIBLE

Reinforcing and Concrete

Steel reinforcement consisting of ¼"-⅜" and ½" bars, was placed, 3 layers at ends and two in the center in accordance with stress requirements. Concrete was placed to a thickness of 3 in. One day after placing, the concrete was sealed with a waterproofing material, and after curing for 4 days the forms were removed and the curved reinforced slab became self supporting. A coat of aluminum paint completed the roof. The underside was painted but may be left natural.

Because this building is to be used only during the summer months, no insulation was used other than the Haydite concrete

slab. For a building of this type in year 'round use a layer of insulation should be placed over the forms before the concrete is poured. The natural bond between concrete and board insulation will hold the lat-

substitutes a shell structure subjected only to direct tensile and compressive stresses for beams, frames and arches which must resist bending stresses and are, therefore, limited as to span length. The thin roof

CLOSE-UP OF CONCRETE PLACING. NOTE SPREADING AND VIBRATING, ALSO BAR REINFORCEMENTS

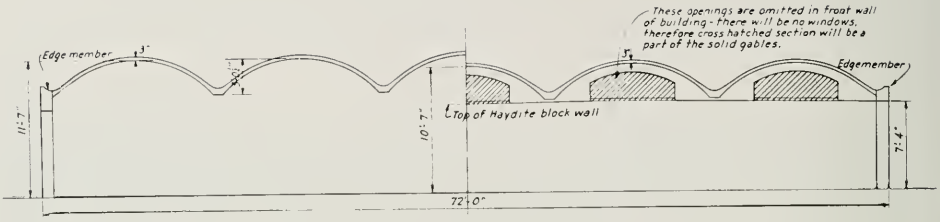
ter firmly in place. Then the underside of the insulation may be painted or whitewashed.

Economical Design

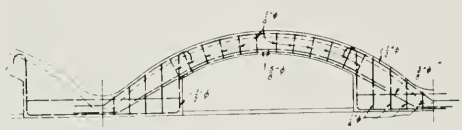
Shell vaults are a solution to the problem of economical concrete roof construction in buildings having wide spans. This advancement in reinforced concrete design

cover formerly supported on rafters, purlins and heavy trusses becomes self-supporting.

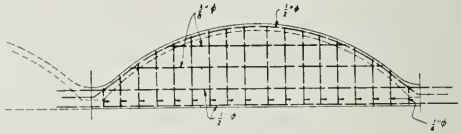
Roberts and Schaefer, engineers, of Chicago, in cooperation with Starline Inc., designed the barn section of the building; Richard Philipp of Milwaukee, Wisconsin, was the architect.


These openings are omitted in front wall of building - there will be no windows, therefore cross hatched section will be a part of the solid gables.
Edge member
Edge member
Top of Haydite block wall
72'-0"

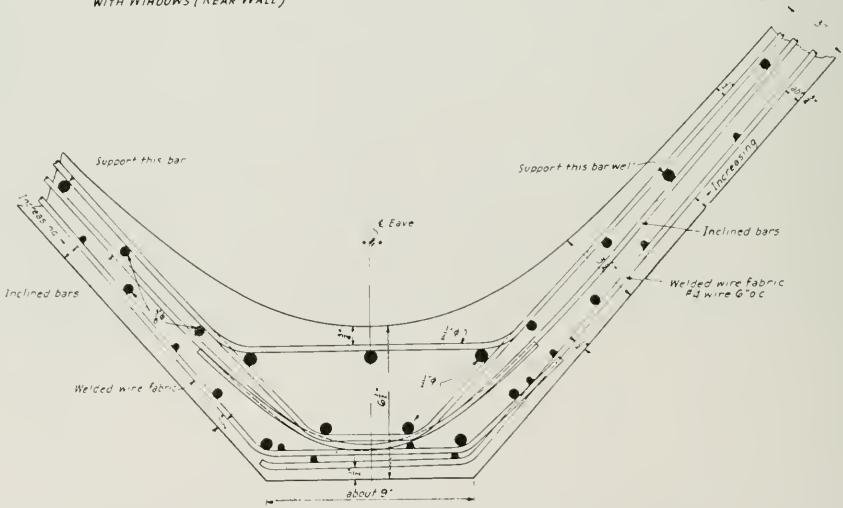
TRANSVERSE SECTION



SECTION OF TYPICAL END FRAMES (GABLES) WITH WINDOWS (REAR WALL)



SECTION OF TYPICAL END FRAMES (GABLES) WITHOUT WINDOWS (FRONT WALL)



DETAIL SECTION THROUGH VALLEY

WORKING DETAILS OF CONCRETE SHELL CONSTRUCTION FOR DAIRY BARN

THE FIELD AND RILEY ACTS DEFINED

by
Erle L. Cope, C. E.

FOLLOWING the Long Beach earthquake of March, last year, the California State Legislature passed two laws relating to the design and construction of buildings, known as the Field Act and the Riley Act.

The Riley Act provides that:

(Section 1.) "Every building of any character, and every part thereof which is hereafter constructed in any part of the State of California, except such buildings as are hereinafter expressly excepted from the operation of this act, shall be designed and constructed to resist and withstand horizontal forces from any direction of not less than either two (2) per cent of the total vertical design load or twenty (20) pounds per square foot wind pressure on the vertical projection of the exposed surface, the horizontal force used to be the one that produces the greater stresses in the building."

(Section 2.) "For the purposes of computing the resistance of any building to such horizontal forces the computed stresses resulting from the combined vertical forces and horizontal forces shall not exceed one and one-third (1-1/3) times the allowable working stresses as hereinafter provided."

This act provides that the working stresses shall be those specified in the building ordinances of the locality where the building is to be constructed. Two classes of buildings outside of incorporated cities are exempted — those not intended for human occupancy and those for use exclusively as dwellings for not more than two families. The enforcement of this act is placed in the hands of the city and county officers. Anyone who constructs a building not meeting the requirements of the act is guilty of a misdemeanor.

The Field Act relates to the safety of design and construction of public school buildings. Any new building and, when the cost exceeds $1,000, the reconstruction, alteration or additions to any school building, come under the provisions of this act. Supervision of construction is placed in the Division of Architecture of the state. Plans for buildings coming under this act must have the written approval of the Division of Architecture before contracts for construction may be let or before any public money may be legally paid for such work. Plans for such work may only be made by a licensed architect or by a structural engineer holding a certificate to use that title and construction must be under the responsible direction of such architect or structural engineer.

Applications for the approval of plans must be accompanied by the filing fee. This fee is ½ of 1% for buildings costing up to $250,000 and ¼ of 1% for amounts in excess thereof, with a minimum fee of $50.

*A paper presented before the San Francisco section of the American Society of Civil Engineers.

The Division of Architecture is given authority to make such rules and regulations as to it may seem necessary to carry out the provisions of the act.

Any person who violates any of the provisions of the act is guilty of a felony.

The act further provides for inspection of construction and for reports on construction by the architect or engineer, the inspector and the contractor. These reports shall be verified and shall set forth that, of his own personal knowledge, the work done and materials used are, in every particular, in accordance with the approved plans.

Inspection of and reports on the structural condition of existing school buildings by the Division of Architecture are provided for. Actual cost of such inspection and report is to be paid by the school district except that this fee may be waived on recommendation of the State Superintendent of Public Instruction when the financial condition of the school district is not such as to permit such payment.

The act was passed as an emergency measure and became effective April 10, 1933. Our fellow member, Clarence H. Kromer, principal structural engineer of the State Division of Architecture, was placed in charge of approving plans and supervising construction of school buildings and he was immediately confronted with the problem of providing rules and regulations for the administration of the act. The engineering sections of the proposed "Uniform Building Code, California Edition", sponsored by the State Chamber of Commerce, were adopted as Appendix A, Temporary Regulation No. 5 of the Division of Architecture. This regulation covers structural design, materials and details of construction and is the work of the Engineering Code Committees of the California Sections of the American Society of Civil Engineers.

The committee of this section represents both Northern California sections and is primarily responsible for Appendix A. Over four years of effort was put into the work by the committee which consisted of Messrs. John B. Leonard, chairman, Henry D. Dewell, H. J. Brunnier, L. H. Nishkian, Walter L. Huber, C. H. Snyder, Harold B. Hammill, and C. H. Kromer. Up to the time of his death Maurice C. Couchot was also a very active member of the committee.

The code committee was formed to draft a building code that would assure such construction that earthquake insurance rates would be reduced. The representatives of the insurance companies stated that the endeavor should be to provide construction that would keep the damage to buildings within the 10% exemption provided in the insurance policies.

The code was intended to be the minimum requirement for all parts of the state and those communities in the less favored regions where earthquakes are more frequent were expected to adopt more rigid requirements than those applying to the whole state.

There are two points of difference between this code, Appendix A, and the ordinary building code. First, the requirement of a horizontal force proportional to the weight of the building, and varying with different conditions, when such force will produce greater stresses than the wind of 20# per square foot. This is also a provision of the Riley Act. Second, the requirement that the different members of a building shall resist the horizontal forces in proportion to their rigidities. These are both rational requirements. The second requirement that the more rigid resisting elements of the building transfer the greater part of the horizontal force causes considerable trouble when attempting to reconstruct poorly built existing buildings.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126.00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Duraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month. following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place. exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring — $3.00 to $9.00 per outlet for conduit work (including switches).
Knob and tube average $2.25 to $5.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 80c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)
Common, $40.00 per M.
Common O.P. select, $42.00 per M (average.)

1x6 No. 3—Form Lumber	$28.00 per M
1x4 No. 1 flooring VG	56.00 per M
1x4 No. 2 flooring	50.00 per M
1x4 No. 3 flooring	38.00 per M
1x6 No. 2 flooring	52.00 per M
1¼x4 and 6 No. 2 flooring	61.00 per M

Slash grain—

1x4 No. 2 flooring	$46.00 per M
1x4 No. 3 flooring	43.00 per M
No. 1 common run T. & G.	42.00 per M
Lath	6.00 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.
1 1-16x2¼" T & G Maple	132.00 M ft.
⅞x3½ sq. edge Maple	140.00 M ft.

	13-16x2¼" T&G	¾x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (deivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.30
2 coats, lime mortar hard finish, wood lath	.60
2 coats, hard wall plaster, wood lath	.55
3 coats, metal lath and plaster	1.20
Keene cement on metal lath	1.25
Ceilings with ¾ hot roll channels metal lath	.70
Ceilings with ¾ hot roll channels metal lath plastered	1.40
Shingle partition ¾ channel lath 1 side	.70
Single partition ¾ channel lath 2 sides 2 inches thick	2.70
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	2.60

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$ .90
2 coats Atlas cement, brick or concrete wall	1.15
3 coats cement finish No. 18 gauge wire mesh	1.40
3 coats Medusa finish No. 18 gauge wire mesh	1.75

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) .17
2.5-lb. metal lath (galvanized) .20
3.4-lb. metal lath (dipped) .22
3.4-lb. metal lath (galvanized) .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Composition Stucco—$1.35 to $1.75 per sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20

*Established by Special Board

CRAFT	Journeyman Mechanics
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	8.00
Pile Drivers Engineers	9.00
Plasterers	8.80
Plasterers' Hodcarriers	6.00
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00

CRAFT	Journeyman Mechanics
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall conatitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job aite.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

Practically all of the criticism of the administration of the law may be traced back to this requirement.

Appendix A is a very excellent regulation for the construction of buildings, representing as it does the best thought of our best structural engineers. It is very comprehensive and in detail but, of course, does not cover every possible question that can arise in regard to design, materials and details and the Division of Architecture has found it necessary to adopt additional rulings amplifying it. To assist in this work the Director of Public Works of the State, Mr. Kelly appointed a committee of six engineers, three from San Francisco and three from Southern California, to act in an advisory capacity to the Division of Architecture. The members of this committee are Walter L. Huber, L. H. Nishkian and Erle L. Cope from here and Professor R.R. Martel, David H. Merrill and Blaine Noice from Southern California. This committee has considered approximately fifty questions that have been submitted to it by the Division of Architecture. It serves without compensation.

The Attorney General has given George B. McDougall, State Architect, interpretations of several parts of the Act; two of the most important ones being generally misunderstood.

He has stated that there cannot be two standards of safety for school buildings. This means that the Division of Architecture must apply the same criteria to a reconstructed building as to a new building in determining its safety. This is a reasonable interpretation.

The other point is that school authorities are legally responsible for the safety of school children. It is not the Field Act that makes them responsible for this safety but certain sections of the School Code. The Field Act has simply brought a realization of the responsibility for safe buildings to school boards. Any school authority that would require school children to occupy a structure known to be unsafe should certainly be held responsible and prosecuted if the children come to harm by such occupancy.

In approving plans for safety the Division of Architecture assumes a responsibility and must be free to express its opinion regarding the methods and type of construction to be used.

No difficulty is encountered in designing new buildings under the Riley Act or under the Rules and Regulations of the Division of Architecturue for school building construction. It is when we try to bring poorly designed and constructed buildings up to the standards set by these laws that we meet many difficult problems. Some buildings are so badly designed and built that it is not feasible to reconstruct them to safe standards.

The State Division of Architecture has no power to condemn buildings, close them nor to force reconstruction. Its authority is over construction for which it is responsible. In preparing plans for the reconstruction of school buildings we are all inclined to blame the Division of Architecture for its rigid enforcement of Appendix A when our problem would be greatly simplified if we could assume that a smaller wind force could be used on wood frame buildings.

The effect of these laws will be to provide better construction in all buildings. The engineers and architects will be more careful, particularly in smaller buildings. The contractors and workmen, will be forced to do good work on school buildings, and will not drop back to the old standards on other work.

LATERAL RESISTANCE OF HORIZONTAL SHEATHING

A. L. Brinckman, engineer in the office of S. P. Koch, Building Inspector, Berkeley, offers for comment the following solution for lateral resistance of horizontal sheathing:

NOTATION

L	clear length of stud, in feet.
b	nominal width of sheathing boards, in inches.
d	center to center of "outside" set of nails—when two or four nails per board.
d′	center to center of "inside" set of nails—when four nails per board.
d″	center to center of "center" set of nails—when six nails per board.
n	number of boards in length L; also equals number of couples of arm d, d′, d″
N	number of nails per board. (Note: when 3 or 5 or 7 nails per board, N=next lowest even#)
h	lateral resistance, in ″#, of all couples of arm d in one stud.
h′	lateral resistance, in ″#, of all couples of arm d′ in one stud.
h″	lateral resistance, in ″#, of all couples of arm d″ in one stud.
c	lateral resistance couple, in ″#, of one couple of arm d.
c′	lateral resistance couple, in ″#, of one couple of arm d′.
c″	lateral resistance couple, in ″#, of one couple of arm d″.
p	shearing or holding pofer of one nail.
e	increase factor allowable for EQK or wind resistance members, 4/3.
B	gross length of wall.
O	gross length of all openings in wall.
B′	net length of solid wall.
S	number of studs in length B′.
H	Total lateral resistance of wall B′.
V	Total vertical external force required for equilibrium.
HL	External horizontal force-couple, in ′#.
VL	External vertical force-couple, in ′#.
K	a constant as per formula and table below.
A	a variable=(3B′+4)

FORMULAE

$d=(b-2)$ (all cases)

$n=L(12)/b$

d′ @ (4 nails only)=(d)/2
d′ @ (6 nails only)=(2d)/3
d″ @ (6 nails)—(d)/3

c=pd h=nc c′=pd′ h′=nc′ c″=pd″ h″=nc″

$S=(1/4) \times (3B'+4)=A/4$

$B'=(B-O)$

$(HL) \times (12)=hSe$

$(H'L) \times (12)=(h'+h')Se$

$(H''L) \times (12)=(h'+h'+h'')Se$

$H=\frac{(L)x(12)}{b} \times pde \times \frac{1}{4}(3B'+4)=\frac{K(A)}{(L)x(12)}$

$H'=\frac{(L)x(12)}{b} \times (p)x(d'+d') \; ex\frac{1}{4}(3B'+4)=\frac{K'(A\ )}{(L)x(12)}$

$H''=\frac{(L)x(12)}{b} \times (p)x(d+d'+d'') \; ex\frac{1}{4}(3B'+4)=\frac{K''(A)}{(L)x(12)}$

$K=(pd)/3b$

$K'=(pd)/2b$

$K''=2(pd)/3b$

$A=(3B'+4)$

VALUES OF K, K′ and K″ FOR VARYING VALUES OF b & N.

p	b	d	K	N=2 or 3 d	d′	K′	N=4 or 5 d	d′	d″	K″
	4	2	11	.....						
	6	4	14	4	2	21	—	.....		
64# (6d)	8	6	16	6	3	24	.....			
	10	8	17	8	4	26	8	16/3	8/3	34
	12	10	18	10	5	27	10	20/3	10/3	
	4	2	15	.....						
	6	4	20	4	2	30	.....			
88# (10d & 12d)	8	6	22	6	3	33	.....			
	10	8	23	8	4	35	8	16/3	8/3	46
	12	10	24	10	5	36	10	20/3	10/3	48

Notes
K=(pd)/3b
K′=(pd)/2b
K″=2) pd)/3b
=2(k)
d=(b-2)
in all cases.

Example: B=30′ O=6′ B′=24′ b=8″ p=88# (10d) N=2
H=KA=(22) x (3 x 24+4)=1,672#.

« « « « With the Architects » » » »

ALAMEDA COUNTY COURT HOUSE

Plans will soon be under way for the new Alameda County court house for which funds are available from a bond issue recently voted. The new building will be located at 12th and Oak Streets, and will replace the antiquated court house and hall of records at the foot of Broadway. Offices have been opened in the Bank of America Building for the preparation of plans and specifications. The architects are W. G. Corlett, H. A. Minton, Carl Werner, J. W. Plachek and W. E. Schirmer.

ARCHITECTS' WORK DISPLAYED

A number of San Francisco architects have drawings of their work on display at the City of Paris Department Store, San Francisco, the idea being to better acquaint the public with the services of an architect. One-man exhibitions are also being held from week to week at the Building Materials Exhibit, 557 Market Street.

SOUTHERN PACIFIC IMPROVEMENTS

The Southern Pacific Company will build additions to its San Francisco warehouse, 4th and Channel Streets, and to its commissary building at 5th and Poplar Streets, Oakland. Both structures will be of concrete and brick and will cover approximate areas of 80x175 feet

ARCHITECTS RESIGN MEMBERSHIP

Lewis P. Hobart, president of the San Francisco Art Commission, and John Bakewell, Jr., have resigned as members of the Commission so as to permit their appointment as architects in connection with the new $3,000,000 school building program, which is about to go forward.

NEW FEDERAL BANK QUARTERS

The Federal Land Bank of Berkeley is to have new office quarters in the eight story loft building at 15th and Clay Streets, Oakland. Plans for the work which involves an expenditure of $100,000 or more, were prepared by James W. Plachek of Berkeley.

WOODRIDGE SCHOOL

To replace the school building destroyed by fire last winter, a two story brick structure is to be erected at Woodbridge, near Lodi, from plans by Harry J. Devine, architect of Sacramento. There will be six classrooms.

ENGINEER BUSY

L. H. Nishkian, 525 Market Street, San Francisco, reports considerable new work in his office, including the engineering plans for a two story reinforced concrete theater, store and office building at Redding; a bank building for the Bank of America at Nevada City; structural changes to the Lowell High School, San Francisco, and structural repairs to the Excelsior Elementary School, San Francisco. Mr. Nishkian also has prepared plans for alterations to the building at Brannan and Rich Streets, San Francisco, for George E. Bennett.

CLAREMONT RESIDENCE

Plans are being completed in the office of F. Eugene Barton, Crocker Building, San Francisco, for a two story Mediterranean style residence to be built facing The Uplands, Berkeley, for J. F. Shuman of Shuman & Clark, attorneys, Crocker Building, San Francisco. There will also be a single span, concrete bridge leading to the house approach. The house itself will have ten rooms, six baths and a two car garage. Approximately $40,000 will be expended.

SCHOOL ARCHITECTS NAMED

Architects to be associated in designs for four new schools, provided for in the San Francisco $3,000,000 school bond issue, have been named by Director of Public Works W. H. Worden, as follows:

Marine Junior High School, $700,000—George W. Kelham, William P. Day and John Bakewell Jr.

Glen Park Elementary School, $240,000—Louis P. Hobart, Bliss & Fairweather.

Lawton Elementary School, $160,000—Dodge A. Reidy and Charles E. J. Rogers.

Visitacion Valley Elementary School, $175,000—Hyman & Appleton and G. Albert Lansburgh.

HUNTINGTON BEACH SCHOOL

Plans have been completed by Allison and Allison, architects of Los Angeles, for a $250,000 steel frame and concrete elementary school building at Huntington Beach for the City of Los Angeles. There will be thirty-one classrooms and an auditorium.

DOUGLAS D. STONE BUSY

New work in the office of Douglas D. Stone, architect, San Francisco, includes a three story reinforced concrete store and loft building on Market Street, near Taylor, running through to Golden Gate Avenue, to cost $110,000; also structural and miscellaneous changes to a training college, and a $15,000 country house in Los Altos. The structural engineering on the Market Street building was done by T. Ronneberg, Crocker Building, San Francisco.

TO REMODEL HOTEL

Plans have been prepared by A. R. Denke, architect, for extensive alterations to the eight story Argonaut Hotel at 4th Street and Pioneer Place, San Francisco. A new entrance is to be built at the corner so as to give additional lobby space and new elevators will be installed for passenger service. Both the exterior and interior will be repainted and decorated and considerable new plumbing will be installed.

SCHOOL ADDITIONS

W. H. and Harold Weeks, 525 Market Street, San Francisco, have completed plans for a music hall addition to the Gilroy High School to cost $12,000, and a one story, frame addition to the Morgan Hill Grammar School, to cost $35,000.

ENGLISH STYLE RESIDENCE

S. Heiman, 605 Market Street, San Francisco, is preparing plans for a $15,000 home designed in the English style and to be built at Ross, Marin County, for A. W. Carne. There will be ten rooms, three baths and double garage.

SAN JOSE AUDITORIUM

Bids are scheduled to be opened June 25th for the construction of San Jose's new Civic Auditorium, for which there is available from city and Federal funds approximately $500 000. The architects are Binder & Curtis of San Jose.

THEATER ALTERATION

Extensive alterations and additions are to be made to the Piedmont Theater, Oakland, from plans by A. A. Cantin, 557 Market Street, San Francisco. About $10,000 will be expended on the improvements, which will be in charge of A. J. Hopper.

TAHOE CITY HOTEL

W. E. Coffman, Forum Building, Sacramento, has completed drawings for a two story rustic hotel at Tahoe City for Carl Becholdt. There will be thirty rooms. Estimated cost is $20,000.

PERSONALS

Wilbur David Cook, landscape architect of Los Angeles, has lately finished ten months of service with the C.C.C. at Cuyamaca State Park. Mr. Cook has resumed the practice of landscape architecture with headquarters at 4025 W 25th Street, Los Angeles.

A. M. Edelman of Los Angeles, secretary of the California State Board of Architectural Examiners, has been elected past president with title of chairman of the executive board of the National Council of Architectural Registration Boards.

Harry G. Hammond, architect, has resumed active practice of his profession at 125 Queen Anne Avenue, Seattle.

Lance E. Gowen, first vice-president of the Washington State Chapter, A.I.A., and Carl F. Gould, member of Bebb and Gould, Seattle, attended the national convention of the American Institute of Architects last month.

Keplar B. Johnson, architect, has closed his Seattle office and moved to Almira, Washington.

John Graham, architect of Seattle, is spending several weeks in Shanghai, China.

Smith O'Brien, architect, announces the removal of his offices to the Marston Building, 244 Kearny Street, San Francisco. Albert Schroepfer, architect, has moved his office to the same address. Both architects will be associated in the same offices.

E. Allen Sheet announces the removal of his offices to 329 N. Western Avenue, Los Angeles. Mr. Sheet was formerly located at 2007 Wilshire Boulevard.

JUDGES FOR COMPETITION

The following jury has been selected to serve in the national design competition for an ideal bar: R. F. Bensinger, President Brunswick-Balke-Collender Co.; Ernest Byfield, Sherman Hotel, Chicago; Carl Eitel, Bismarck Hotel, Chicago; Benj. H. Marshall, Architect, Chicago; Harvey W. Corbett, Architect, Ralph Walker, Architect, New York; John A. Holabird, Architect, Chicago. Applications from competitors are being received from some of the leading architects, artists, interior decorators and designers.

PORTLAND MEMORIAL TOWER

Ernest Kroner, architect of Portland, Oregon, has been commissioned to prpeare plans for an observatory and memorial tower for the city of Portland. Application for a Federal loan is pending. Mr. Kroner's design for the $500,000 structure calls for a 355 foot tower of steel and concrete with white cement finish.

Chapter and Club Meetings

SOUTHERN CALIFORNIA CHAPTER

The Southern California Chapter, American Institute of Architects, held its regular monthly meeting at Hugo's restaurant in Los Angeles, May 8, Sumner Spaulding, president of the Chapter, presiding.

Reporting on the activities of the committee on public works, S. B. Marston stated that a definite movement was under way to stop the preparation of plans by public bodies. The committee has met with public boards in this district and, while no assurance has been given that the work coming under the jurisdiction of these boards would be placed in private hands, it is believed progress has been made. Federal authorities are to be approached on the matter later. It was also stated that county and city bodies had taken an interest in the Chapter's proposed plan of competition on public building design. That the Associated General Contractors are behind the Chapter in this campaign, was indicated in a statement made by Ralph C. Flewelling, who has been informed that the contractors endorsed the program 100 percent.

Mr. Spaulding announced that he had been elected president of the local branch of the new Construction Industries League, a national body composed of all professions and trades engaged in the construction industry.

The committee on structural and mechanical engineers has held two meetings since last Chapter meeting, according to a report made by Henry Carlton Newton, chairman. These meetings have been devoted principally to setting up a schedule of fees for mechanical engineers.

At the request of the Women's Community Service Auxiliary of the Chamber of Commerce, sponsors of the Festival of Arts which will open on June 22, the architects will hold an exhibit at the Los Angeles Museum during the festival period.

Reporting on executive committee activities, Mr. Spaulding stated that a committee had been appointed to restudy the Chapter constitution and by-laws and present their findings at the annual meeting in November. Members of the committee are: A. F. Rosenheim, chairman; David J. Witmer, and Ralph C. Flewelling.

Copy is being prepared, according to Mr. Newton, for a booklet designed to sell the services of the architect and engineer and to be made available to owners, financiers and others. Fifty per cent of the cost is to be borne by the Chapter and the other half by the engineering groups. At the suggestion of Mr. Flewelling, a schedule of minimum services will be incorporated in the book.

Edward Cray Taylor, chairman of the Chapter's building material trades committee, introduced O. W. Ott, mechanical engineer, who gave an interesting talk on cross connections and back siphonage, causing impurities in water systems.

The speaker of the evening was Dr. Owen C. Coy, director of the California State Historical Association and professor of history at the University of Southern California. Dr. Coy discussed Southern California history as stimulated by the historical survey.

A group of measured drawings prepared under the direction of the local Historical America Building Survey was exhibited by Henry F. Withey, chairman of the Chapter's committee on historical works and provoked much interest.

ARCHITECTS ENJOY BANQUET

Present day problems in school building design and construction were discussed at an enjoyable banquet at the Architects Building Material Exhibit, Los Angeles, Tuesday evening, June 5. About 400 architects, structural engineers and others identified with the building industry were in attendance. Clyde H. Potter of Southern Counties Gas Company was the toastmaster.

Frank A. Bouelle, Los Angeles city superintendent of schools, discussed the program for rehabilitation of earthquake damaged school buildings and the strengthening of others to resist severe shocks. Funds are now available to carry out about one third of the $31,000,000 rehabilitation program. When that has been spent he could not say now what would be done. A new trend in education he said was manifest by present consideration of a "department of activities." Just what line it would take or how it would function could not be told now. Educators are working out a program and whatever it may be it would probably necessitate new ideas in planning and designing school buildings. It now seemed certain, he said, that in the future it would be the policy of the board of education to build only one story buildings for elementary classes and buildings of not more than 2 stories for older pupils.

Dr. Willard Stanley Ford, chief deputy superintendent of city schools, followed up Superin-

tendent Bouelle's ideas with the statement that it was inevitable there would be some new type of school building to meet changing trends in education. But he believed it should be preceded by thorough study and consideration and that whatever new building was done should be planned not for a few but for at least twenty years. He had in mind the problem of erecting on three acres a one-story school building to accommodate 900 pupils and at the same time providing 200 sq. ft. of playground space for each pupil. Yet that was the situation confronting school authorities at the present time.

Los Angeles county superintendent of schools, A. R. Clifton, declared that the money problem entered into the school reconstruction and strengthening program in the county as well as in the cities but that buildings must be made safe, whatever the cost. He believed a way to do so would be found. Already there had been clamor for repeal of the Field bill requiring school buildings to be made earthquake resistant. He declared the Field bill must be kept on the statutes and pleaded for cooperation to that end. The responsibility which it imposed on school trustees was very great and the county was threatened at one time with the loss of 100 school trustees, but only one quit.

George B. McDougall, state architect, chief of the Division of Architecture, spoke optimistically of the future for those engaged in construction, in connection with state public works. He called attention to the fact that some thirty major state institutions are now all more or less over-crowded and that very soon the state would be compelled to erect more buildings. He predicted that within the next few years there would be much state building.

Col. E. H. Wilcox, directing SERA activities in Los Angeles county, speaking in the absence of State Director McLaughlin, said immediate prospects were that $1,150,000 would soon be available for materials to complete CWA projects and that eventually the $1,300,000 desired would be obtained, due to the efforts of the state director. He said that labor would be provided by the SERA for school reconstruction where it was desired.

Other speakers were: A. S. Nibecker, chief of the architectural division, business department, Los Angeles board of Education· Dean A. C. Weatherhead of the College of Architecture, University of Southern California; Mr. Leftwich, representing C. M. Potter of the Federal Home Owners Loan Corporation; W. A. Simpson, past president of Los Angeles Chamber of Commerce, and president of Wm. Simpson Construction Co.; Sumner P. Spaulding, president Southern California Chapter, American Institute of Architects, and John J. Donovan of Berkeley.

The regular monthly meeting of the Southern California Chapter was held at Victor Hugo restaurant June 12. Sumner Spaulding presented a report on the convention, and Ralph C. Flewelling submitted a tentative school program. Carroll Page Fisk was the speaker of the evening.

WASHINGTON STATE CHAPTER

"California Missions" was the subject of a talk, illustrated with sketches, by Harlan Thomas, head of the architecture department, University of Washington, at the May 3 meeting of the Washington State Chapter, A.I.A., held in Seattle. Mr. Thomas made the sketches on a recent trip to California.

June activities of the Chapter were devoted to participation in the celebration of the Twentieth Anniversary of the establishment of the school of Architecture at the University of Washington.

The customary June meeting with the Tacoma members of the Chapter has been postponed until August, when the Tacoma group will be host at the celebration of the fiftieth anniversary of the construction of the Tacoma Hotel.

MENDOCINO COUNTY SCHOOLS

A group of three school buildings is to be erected at Covelo, Mendocino County, for the Round Valley High School District, from plans by William Herbert and C. A. Caulkins, Jr. of Santa Rosa. There will be a reinforced concrete gymnasium and a frame classroom building and shops. The estimated cost is $75,000.

REBUILDING FAMOUS BATH HOUSE

The historic Sutro Baths at Point Lobos are undergoing extensive alterations from plans by Harold G. Stoner, architect, 810 Ulloa Street, San Francisco. The baths are to be converted into a modern Coney Island resort, with an Olympic type swimming pool, tropical beach, museum, midway, barbeque pit and various amusement features.

ANNUAL SKETCHING COMPETITION

The annual architectural sketching competition sponsored by the Washington State Chapter, A.I.A., is announced and September is the final date for delivery of sketches to Mr. Gove, chairman, 1701 Puget Sound Bank Building, Tacoma. Judging exhibition will be held at a fall Chapter meeting in the Seattle Art Museum.

FEDERAL BUILDING, FAIRBANKS, ALASKA

AN ALASKAN MONOLITH

The new Federal Building completed early in 1934 at Fairbanks, Alaska, is constructed of monolithic concrete. Notable advancement has been made in the development of this type of construction in recent years. Better methods of concrete quality control have done much to insure the durability of monolithic concrete buildings, even when subjected to most severe exposure. These factors, and the adaptability of concrete to practically any architectural treatment, led the architect to select monolithic concrete for this post office in the far North.

Forms were constructed of unlined wood, using 1x6 sheathing. After stripping the forms the concrete was lightly rubbed with carborundum bricks, but not sufficiently to remove the grain marks left by the form boards. The double V-shaped grooved ornament in the pilasters and in the spandrels above the top story windows was formed in the concrete by nailing V strips to the forms. Other ornaments on spandrels and parapet are of cast aluminum.

The building is four stories high, with penthouse, and contains 725,000 cubic feet. The total contract price was $410,000. The building was constructed by the Walter MacDonald Construction Company, St. Louis, Missouri. This company is now erecting a school building at Fairbanks which will also be of monolithic concrete.

LOS ANGELES SCHOOLS

Close to 100 architects and engineers are engaged in making plans for the reconstruction and rebuilding of quake damaged school buildings, according to Mrs. Letitia J. Lytle, president pro tem of the Los Angeles Board of Education.

"Due to the diligence of the school business department and its cooperation with the city building department, the office of the state architect and the local engineers of the P.W A. a total of 134 projects are now actively under way," declared Mrs. Lytle.

"Two buildings are under construction; plans for ten are in the office of the state architect for approval; one is being advertised for bids; eighty are in the hands of architects or structural engineers, for which preliminary drawings are being made on 53 projects and final working drawings on 27; architects or structural engineers have been recommended for forty structures and the plans for the Torrance elementary school have been adopted and only await funds being made available by the P.W.A."

The projects for rehabilitation now under active development are employing the services of 57 different architects and forty structural engineers.

BRIDGE INSPECTION

San Francisco engineers will be entertained by the Golden Gate Bridge officials, Sat., June 23.

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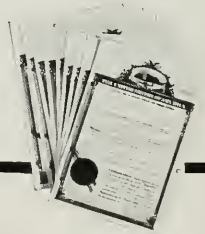

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A RADIO TALK

By ALBERT J. EVERS, F.A.I.A.

The idea that the Government should actually construct housing for its people is new to us. In all of the principal European countries, especially since the world war, a great amount of this government housing has been erected. It is said that England has in that time housed 1/8 of her population; Germany, France and Belgium 1/6 of theirs. We should all understand and be interested in the purposes and policies of the Federal Government with regard to housing. Almost everyone is aware that a housing program is under way, but few have a full knowledge of its status and progress, or its possible development in our western communities.

Some weeks ago, the Community Forum program was devoted to city planning and housing. At that time, you were given a brief description of the government's entry into this new field and the apparent reasons for their action. Some of these reasons were: The relief of unemployment, the elimination of slums and erection of decent living quarters and a demonstration of planned communities as opposed to an anarchy of land use. The formation of a new corporation, the Public Works Emergency Housing Corporation, was briefly touched upon. This corporation now appears to be gaining rapidly in importance.

To review the situation briefly: When the administration in Washington established a Housing Division under the P.W.A., it was announced that loans would be made to limited dividend corporations for low rental housing projects. This Housing Division was primarily an emergency organization. Private building construction having almost ceased, its immediate object was to provide employment in the prostrate building industry. After six or eight months' tryout, what has been the result of its offer of loans? Information at hand seems to indicate that out of about 400 limited dividend projects, about 20 have been tentatively approved, and of those only a portion have actually started construction. This is rather a meager showing. Obviously, the plan for making loans to these limited dividend corporations has not proved a speedy recovery measure up to this time. The authorities state that too often the projects submitted were formed primarily to dispose of vacant and idle land; others were not up to standards required and could not possibly hope for financial success in operation; very few were for slum clearance and reconstruction.

Slum clearance and replacement with modern, low-rental housing is exactly what the government wanted. A run-down neighborhood becomes a blighted area; a blighted area develops slum conditions, for a slum is an obsolete perma-

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Dear Mr. Architect:

Numerous of your colleagues have pointed out the effect of floodlighting on exterior design. It is quite obvious that strong light from a nearby source may shift various planes and shadows. And the effect, unless it is considered in advance, may not be as pleasing as anticipated.

We suggest that you give original consideration to floodlighting when you are planning buildings, monuments or structures likely to be illuminated by artificial light reflected against the exterior.

We have some literature on this subject available, and will be happy to send it to California architects who are interested.

Cordially yours,

Pacific Coast Electrical Bureau

447 SUTTER ST., SAN FRANCISCO
DEPARTMENT J-6

P. S. There is no need to remind you that floodlighting enhances the importance of a structure in relation to its surroundings. But we might add that, in the case of commercial structures, rental value, prestige and address-value are considerably higher where the visible facades are so lighted.

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nent residential district whose facilities are overtaxed and whose buildings have outlived their usefulness. These blighted and slum areas are just what the Government wished to eliminate, but very few projects submitted proposed to do work of this kind—and for a very good reason. Only in exceptional cases can private capital profitably undertake this work. Appraisal, assembly of land parcels and the demolition of buildings in large areas have proved to be beyond the capacity of private endeavor. Similar movements in Great Britain, Germany, France, Austria, Holland and Sweden have all involved the assistance of central governmental and local authorities, both with long-term loans and actual subsidies. Private capital is timid about entering into arrangments required for governmental loan. The present cost of land and construction alone make almost impossible rents low enough to be practicable for the economic necessities of the low-income group.

The Public Works Emergency Housing Corporation, which I mentioned before, was set up to overcome these difficulties and the policy of the Government seems to favor the type of project requiring its functions. Mr. H. L. Ickes, Secretary of Interior and Public Works Administrator, is president of this corporation, and Mr. Robert D. Kohn, Director of Housing is one of the vice-presidents.

Public Works Administrator Ickes has also recently said:

"Where a city or housing authority is legally empowered to . . . carry out . . . projects of low-cost housing, the Administration will be particularly interested. . . . The same is true . . . where for the time being a city has not the legal powers but will agree to make every effort to secure enabling legislation in the future. . . . In any case preference will be given to projects located in congested areas occupied by obsolete structures in an advanced stage of decay or delapidation."

From these statements, it is apparent that the Federal authorities are willing to undertake housing work only when the community is favorable to the project. For favorable sentiment of cities or communities a thorough understanding of the subject by individuals is necessary. Many eastern cities are awake to the opportunity and are already preparing the way for the establishment of housing authorities who can take up the management and control of these projects in cooperation with the Emergency Housing Corporation. Out of a published list of some 30 of such cities, the most westerly one is Denver.

What about our cities on the Pacific Coast? Are conditions here so good that they do not need attention, or are we simply neglecting our future?

A recent survey of 50 blocks in San Francisco under the sponsorship of the San Francisco Housing Association has shown conditions which are deplorable. For instance, one two-flat building is housing 21 people living in one-room apartments, cooking on gas plates in their living and sleeping rooms, with only three toilets for the entire building. One building, originally a three-flat building, has 24 roomers, one bath tub and two toilets. A 12 room house with 15 adults cooking in two kitchens, garbage being kept in the bath room and removed only once a week.

We really cannot judge the true situation until a survey is made which will produce the facts. A visual survey may arouse our suspicions but only a careful house-to-house canvas can tell the real story. Let us not be prejudiced in our minds, but be honest with ourselves and think primarily of the best interests of our community. Demolition and replacement of slovenly, obsolete housing will improve our cities, revive the desperate situation of the building industry and provide employment for technical men, craftsmen and a large army of workers. It will remove breeding places of disease and crime, the potential source of large and disastrous fires; it will liquidate frozen assets and diminish vacancies in other portions of our cities.

With these matters in mind, it would seem to be of the greatest importance that we look carefully at the true condition of our cities, that our citizens take a vital interest in what the Federal Government is offering to do for us and that we become familiar with its purposes and policies. A better and more complete knowledge of the subject may cause us to eliminate many old and cherished prejudices and to lend our support to a work that will benefit everyone.

HAWS DRINKING FOUNTAIN CATALOG

The 1934 catalog of the Haws Sanitary Drinking Faucet Company is off the press and architects should secure a copy to keep their data on drinking fountains up to date. A number of new models are listed, including several attractive fixtures designed along modern lines. The catalog is standard size and profusely illustrated. The material is well arranged with one page devoted to general information for the architect and engineer for use in his specifications.

FRED RICE DORN

Fred R. Dorn, 68, architect, of Los Angeles, died of heart trouble at the home of his daughter at Santa Maria May 18. Mr. Dorn had been a resident of Los Angeles nearly half a century. He was the architect of the Rives-Strong office building and the Westchester Apartments, Los Angeles.

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According to figures gathered by Mr. Miller, the condition of these 3,500,000 children has been the direct result of a combination of forces and influences growing out of the depression, the passage of recent child labor laws, and the NRA codes restricting the employment of children under sixteen years of age. Even though enrollments have increased tremendously during the past two or three years, he said, all efforts toward absorption have failed alarmingly so far. As an example of increasing enrollment he cited the 4,030,369 students who were in high schools in 1930 as com-

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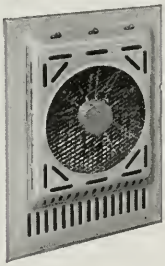

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pared with the 5,092,047 who were registered in 1934, or an increase of 25 per cent. This is also, he said, the most expensive level of public school education.

"Meanwhile the funds available to carry on the public schools have steadily diminished," said Mr. Miller. "After meeting necessary fixed charges, providing for only essential maintenance and supplies, most school systems had to cut teachers' salaries to balance their slenderized budgets.

"This left little or no money available for modernization and construction, or for the additional equipment and supplies so pressingly needed to carry-on, as well as provide for the increased enrollment. A great accumulation of serious need has therefore developed."

Until the last few years, Mr. Miller said, our normal annual national expenditure for education was approximately three billions of dollars. This was considered generally adequate, though by no means excessive. During the years leading up to the depression the American expenditure for new public school building construction averaged approximately $400,000,000.

"When we compare this latter figure with that of only approximately $9,000,000 for the first three months of 1933, it is not difficult to understand why we have those 3,500,000 potential school children on the streets," Mr. Miller said.

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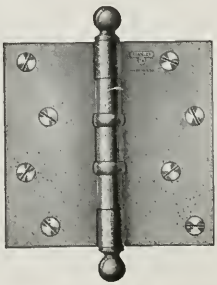

Mr. Miller listed four obligations, drawn from a study of his survey, which he said must be discharged before adequate schooling could be provided for the enrolled and unenrolled, but eligible, children of the United States. These were, first, the construction of new schools to meet normal building operations suspended during the depression, and the replacement of many emergency portable and temporary buildings. Secondly came the construction of additional new schools to meet the added burden developed by child labor abolition in industry. The third requirement is the modernization and repair of old school plants badly neglected because of a general lack of funds. This phase, Mr. Miller stated, affects fully 25 per cent of the 247,289 public school buildings enumerated in the 1930 census.

The fourth and final requirement is the purchase of new and replacement equipment, apparatus, furniture and supplies. This last is illustrated by a decline in text-book purchases alone, through lack of funds in 1933, of $5,487,177.

ENGINEERS VISIT McNEAR PLANT

The Structural Engineers Association of Northern California and a number of San Francisco and Oakland architects were guests of the McNear Brick Company at McNear's beach Saturday, June 16. It was one of the largest and most enjoyable gatherings of structural engineers in recent activities of the organization. Before going to the Point the picnicers visited the Marin tower of the Golden Gate Bridge, the guest of Chief Engineer Joseph B. Strauss. About an hour was spent inspecting the 746 foot tower of steel. The brick works were next visited where the visitors viewed the Haydite plant in operation. Haydite is made from shale rock, baked under terrific heat and broken into small particles and used in place of rock as a concrete aggregate. It makes a lighter concrete and also acts as a very good insulator.

At the beach the assemblage divided into groups and passed the time playing golf, fishing, swimming, base ball and minor athletic contests, arranged and creditably supervised by W. H. Popert of the Columbia Steel Company. Amusing prizes were awarded the winners, the awards being handed out by Geo. B. McDougall, State Architect, who came down from Sacramento with a good part of his working force. Ed Flanders of Starks and Flanders, architects, was also in evidence. Barbecued meat, fresh crab and other delicacies were served for lunch and supper and there was plenty Golden Glow for the thirsty. W. Adrian received a hearty thanks for his painstaking labors in getting the boys signed up and the McNears and Sales Manager Tait also came in for enthusiastic praise.

Musings of the Philosopher

by Chester N. Ninekirk

An Age of Streamlines
Humans vs Humans
The Chinese Theater

RECENT experiments conducted at New York University Guggenheim School of Aeronautics, in charge of Mr. Alexander Klemin, have shown conclusively that true streamlining of automobile bodies would save about thirty per cent of our gasoline at a speed of thirty miles per hour, and over half of it at sixty miles per hour.

"Streamlining"

Such automobiles are being built for the 1934 market; engines balanced over the front axel instead of behind as it is in the conventional car. Perhaps later models will install the automobile power plant behind and below the back seat thereby increasing tractive power for higher speeds, locating front and rear seats further forward for more uniform balance and streamline design.

* *

Railroads are streamlining their rolling stock and new lightweight Diesel engine designs have already been built for greater speeds with commensurate safety and comfort. Automobile trucks will no doubt follow suit as they have done in the past. Later on, as speed and power increase, other problems will have to be solved; steering, for instance. Automobile drivers will either have to aim their vehicles in the direction of travel, or it may be necessary to build grooves on the highways in such a manner as to remove the eccentricities and dangers of high speed driving. Crossings will be eliminated by underpasses.

Now we have arrived in our mental evolution to a design of automobiles comparable to the modern streamlined train. What then?

Your guess is as good as ours!

THINK of the millions of characters and nationalities, as they are mixed within the melting pot of human life as we know it. In looking through the windows of our small intellects, is it any wonder that we marvel at the propensity of the situation? Perhaps this is one of the reasons why humans possess such insatiable interests in other humans, and why our interest is drawn to certain plays and stories about ourselves. Human situations, intensified in print or in the spoken drama, for instance, intrigue our interest and add to the color and glamour of life. As people differ, so in the same respects do the characters portrayed in books and drama, differ; as well as do the methods of presentation, even though the basic principles may remain the same. Let us consider a particular variation in this respect.

An Old Orthodox Proscenium

* *

We will select the institution of the ancient Chinese orthodox theatre of the Ming Dynasty, as fathered by one, Ming Quong. The best way to obtain information about such a matter is to visit a Chinese Theatre with a Chinaman who is thoroughly conversant with the subject matter to be considered. Let's do it just that way and imagine ourselves about to enter a Chinese Theatre in China. Our guide has told us that six hundred twelve plays are being enacted in China; that the type of production we are about to see, dates back to the year 750; that all Chinese acting is exaggerated. There is no curtain. There are no properties except perhaps a table and two chairs, and no scenery.

We enter the dress circle and look toward the stage. Two actors enter the stage through a representation of a tiger's mouth which, we are told, is the entrance; another actor has just left through what is unmistakably a dragon's mouth, the exit. There are no women in the play; in fact, women were not allowed to appear on the stage until the year, 1931. Women are impersonated so cleverly that the casual visitor would never be able to distinguish the speaker as a man. The Chinese say that only fools go to see the plays and that the actors are lunatics.

But why are all those tea pots on the stage? Why so much disturbance and talking in the audience?

* *

The answers are: that the front row of seats has no bench table in front as do the other seats, so the men sitting in front rows, put their tea pots on the stage. . . . . It's perfectly all right to greet your friend whom you may have spied, drinking his tea over there some ten or fifteen rows distant. It's all right because these things are "being done" in China.

* *

Oh yes, the play; an actor has just come on with a yellow face, which means that he is a "God." The other two men with black faces are taking the parts of enemies. The yellow-faced individual has just announced what he is going to do in the play and just how he is going to do it. We glance from stage to audience and finally decide that the audience provides more fun for us than the actors — perhaps we are more surprised than entertained for there are Chinamen here, there

Audience vs. Actors

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and everywhere, dropping their walnut shells and orange peels on the floor. Since there are no cuspidors in China, they spit upon the floors.

Our guide asks us to try a branch of apples. They are crab-apples on a string with shelled walnuts between the halves, the whole having been dipped in boiling sugar. They are the same strings of apples which we saw being hauled through the dust-blown streets on the back of that filthy-looking Chinese vendor, only this very afternoon. Concealing our inhibitions, we try a string of apples.

* *

What are those steaming towels being thrown about? Would you like one? You may have a hot towel thrown to you by the attendant. When you are through with it you may throw it back to the attendant who in turn will throw it to a man at the rear of the theatre who stands by the tub. This fellow will put the towel in perfumed hot water, smell water, the Chinese call it; wring it out and fling it back again for the next victim. Everyone is here to eat, drink and be merry; thoughts of germs and bacteria do not enter here.

* *

It is now 11:30 p.m., and it is the time when the stars of the Chinese drama begin to appear, although this performance started at 7:30. Of course, it doesn't take that long to finish a play. The individual play only lasts about for-

NEXT MONTH

Unusual Type of Steel Construction at Stanford University described

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ty-five minutes each. Usually the theatre will start a performance about 7:30 p.m. which runs ordinarily until 1:00 a.m.

Chinese people go to the theatre to rest, eat and seek comfort, therefore the hot towels, food, and extemporaneous conversation.

Actors Like Their Tea

Even the actors fall into the spirit of the occasion. Should an actor feel hot and uncomfortable under his hairy wig, he may stop in the middle of his act and ask for a drink of tea. Tea seems to be a panacea for most discomforts and the time or the place for imbibing this universal beverage is of little consequence.

* *

We noticed that men occupied the first floor. Women and children sit in the balcony. On occasion a Chinaman may sit with his newly acquired concubine in the upper seating area. If the audience gets interested enough in the acting and takes a liking to some particular star, they will shout, "how" — "how" which means, good. These people go to the theatre to hear the actor, not the play. The price of admission to most of these theatres is inexpensive, and since but two per cent of the people read, the shows become a means of diversion and are quite thoroughly attended.

* *

Chinese actors must learn 375 parts before they can graduate. This requires about seven years of constant study. The subject matter is taught by word of mouth and is usually beaten into the student without recourse, so that students become real slaves to their masters in every sense of the meaning. Boys have their voices broken by being made to yell for long periods of time at the very topmost pitch. Then they are trained as female impersonators. Upon graduation, a student is forced to appear in back-country play-houses until the necessary experience is acquired in acting as well as in the dodging of old eggs

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and other produce. Then comes another seven years on the "legitimate" stage with practically no remuneration because of the fact that it takes about seven years to pay the master for his didactic ownership in the full-fledged actor. Upon settlement with his teacher the Chinese actor is on his own.

* *

He is now considered one of the lowest social forms of development, for he is ranked in the same category with the barber, soldier, and undertaker. Such are the steps to glory for the individual who seeks to obtain stardom in the Chinese drama.

GLASS HOUSE

America's first glass house makes its appearance at the World's Fair in Chicago this summer. It is a home, built to live in, complete, pre-fabricated in the factory. George Fred Keck, its architect, says that it can be put up in two weeks. It is known as the Crystal House. It will be placed on Northerly Island. The "House of Tomorrow" in the Home and Industrial Arts exhibit will be open again this year. Mr. Keck is the architect of this house also.

This new type of house, revolutionary in construction, has a steel frame which bears all loads. All exterior walls are of glass, opaque where desired, and without glare throughout. It is completely air conditioned and such windows as are used are fixed.

Floors are of concrete or rubber tile, either material being used, depending on requirements. All trim is metal, including door jambs and base. Doors are metal covered. Every electrical convenience is installed, the kitchen being mechanized.

The Crystal House is frankly experimental. The World's Fair is in many ways a laboratory in which to study human reactions to so extraordinary an idea. The builders desire to find out what the public, as a mass, thinks of the idea.

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Some of the radical ideas are:

There are no closets; wardrobes, easily cleaned, are substituted. There are no electric light fixtures as such, or brackets; all lighting is from plug-in-lamps, easily moved. There are no masonry walls, no basement; living rooms have gone up-stairs.

The ground floor contains the garage, heating and cooling unit room, laundry facilities, a recreation room and entrance hall. The second, or living floor, contains a combination living - and - dining room and a kitchen; the third floor, two bedrooms and two baths.

Exterior walls of the lower, or service floor, of the Crystal House are of opaque glass. The upper walls are transparent, giving one the feeling of practically living out-of-doors. When privacy is desired, or the outside light is too strong, mechanical shades are rolled down.

The house is so designed that it can be almost wholly pre-fabricated in a factory. When the parts are brought to the homesite all that is left to do is to put them together. It is estimated that the enclosure, walls, roof, etc., can be put up in one week. Another week is allowed for installing the plumbing, heating, air-conditioning, electrical work and what little carpentry as is necessary.

CALIFORNIA PATENT

A brick wall construction has been invented by Walter R. Simons of Los Angeles.

The construction comprises two opposed tiers of blocks, in each tier the blocks of a lower course having transverse corrugations on their upper faces and the blocks of the next higher course having transverse corrugations on their lower faces, flanges which extend in a vertical plane being formed around the outer faces of the blocks in each tier of the wall, and a cementitious filling in said spaces, tie rods occupying spaces formed by opposite corrugations, said tie rods having lateral extension to key them in place, each of

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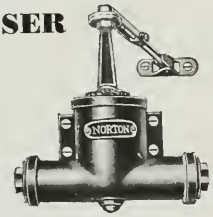

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said rods being thereby keyed to blocks of both tiers, the length of said tie rods being slightly less than the distance between the flanges at opposite sides of the wall.

BUILDING FOR MAY

Building permits as revealed by the twenty-five cities on the Pacific Coast reporting largest volume during May 1934 were approximately 25% higher than in April, but due to issuance of permits for the construction of the San Francisco - Oakland Bay Bridge they were materially lower than in May 1933, according to the Western Monthly Building Survey prepared by H. R. Baker & Company of San Francisco. The figures of the past month, however, were approximately the same as the same month of 1933, eliminating abnormal developments. Permits for the twenty-five cities amounted to $4,663,612 in May 1934, compared with $3,700,405 in April and $35,961,763 in May 1933.

Sixteen Pacific Coast cities reported increases in May over April. Twelve showed increases in May over May of last year and ten reported gains in May over both previous months.

Totals for the seventy-five cities reporting for May were $5,288,188 compared with $36,701,135 in the same month last year.

	May 1934	April 1934	May 1933
Los Angeles	$1,028,023	$1,129,630	$ 1,415,742
San Francisco	613,417	496,321	31,815,676
Seattle, Wash.	582,530	173,250	139,870
Portland, Ore.	288,605	236,310	131,965
San Ber'd'o	224,817	7,260	14,360
Oakland	220,920	177,631	152,434
Beverly Hills	202,800	179,500	204,460
Glendale	202,490	93,915	77,204
San Mateo	158,055	8,845	41,825
Vancouver, B.C.	119,235	143,380	160,117
Long Beach	105,526	110,449	923,540
Fresno	99,820	94,051	20,646
San Diego	87,233	155,374	186,749
Stockton	82,042	136,825	19,768
Ogden, Utah	76,850	14,989	15,230
Sacramento	74,021	153,714	82,695
Yakima, Wash.	73,260	21,758	6,775
Phoenix, Ariz.	65,815	24,220	150,265
San Marino	58,132	26,689	70,928
Spokane, Wash.	53,205	72,955	62,785
Tucson, Ariz.	50,119	20,979	21,923
Berkeley	50,101	61,205	43,001
Pasadena	49,647	101,379	84,879
Alameda	48,775	19,998	64,398
Santa Ana	48,174	39,778	54,528
Totals	$4,663,612	$3,700,405	$35,961,763

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JULY 1934

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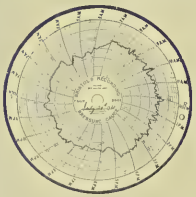

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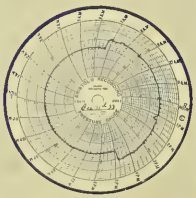

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PRESENTATION of the American Institute of Architects' Gold Medal by President Roosevelt in the East Room of the White House on May 16 to Professor Ragnar Ostberg, architect of Stockholm's famous town hall, was a happy incident of the recent A. I. A. convention. President Roosevelt's impromptu and winning remarks were most appropriate. He compared the days of the early Renaissance with the present day, marking them both as a time of experimentation. This is the eleventh Gold Medal presented by the Institute to architects for distinguished service. Six of these have gone to American architects, two to English, two to French, and now one to a Swedish architect.

:: :: ::

PORTLAND has just adopted a new housing code, a code which is a novel experiment in housing regulation technic. It is the outcome of almost twenty years of conflict between interests that have struggled to gain supremacy in housing matters. It is a compromise but one which may result in a better understanding of the problem by all interested parties.

The basic principle upon which this code is founded is the assumption that anything which discourages or makes impossible bad housing, or which encourages and makes possible good housing, shall be permitted. This may not, at first thought, impress one as a proper foundation for a housing code, but some examples of how it is applied may clarify any unwarranted misconceptions. Keep in mind that there are at least two distinctly different viewpoints of those interested in housing — one the unselfish housing enthusiast and the other those who are constructing living quarters for investment sake, wholly or in part.

The old Portland code "prohibited" — the new code "allows" but only under circumstances which make for good living conditions.

Ormond R. Bean, architect of Portland, referring to the Portland code in a talk before the Western Conference on Government at the University of California, declared:

"It is the most complete housing code that I have been able to find in my studies of the subject. Its completeness, of necessity, requires detailed regulations. This completeness may cause its downfall unless very carefully administered. After it has been firmly established it may be possible to simplify it to a marked degree. It will receive its greatest criticism from those who do not want to use their heads in designing buildings. That class of technician, if he can be so classed, wants to take the path of least resistance, and when required to use his brains, objects. This code is so flexible in its regulation that almost anything can be done under it by the designer and it should result in good housing conditions.

"To simplify and make more easily understandable, the code includes one hundred and six explanatory diagrams so arranged that they appear in the text where needed.

"The text of the code has been so arranged that everything which has to do with a certain subject is grouped in one section or title. Definitions have been clarified and new definitions and terms coined where thought needed. Precedent did not hamper the new code. New names were applied, such as 'group family dwelling,' 'recess court,' 'isolated yard,' 'required building site,' and may more which helped to cover particular which arose during the writing of the code.

"The idea which made possible this code was the idea that there are two sides to the question and that each side could and should be taken into consideration in drawing up a practical regulation. I am sure that both sides will admit that the new code has certain advantages for each. I am sure that the housing enthusiasts will admit that the new code will improve living conditions to a marked degree. I am sure the designer will admit that the flexibility of the code will encourage a better class of construction and investment. It is a novel experiment which I believe will be the foundation of many future codes."

There is a housing commission set up to assist in the administration of the Portland code and in recommending to the City Council revisions and changes in the regulations whenever such changes seem needed. The code has been written with past evasions, past difficulties and past standards in mind. It will correct many of those and it should prove a big step toward more perfect housing conditions in the Rose City.

:: :: ::

THE severe drought condition in the middle west has focussed attention on all available sources of water supply. Shortage of water is made doubly serious by unsanitary disposal of sewage into the extremely low water courses. Few people realize the importance of adequate disposal of domestic wastes. Sewerage facilities like water supply services are taken for granted. It is only in such emergencies as the present that local interest can be aroused.

In every state there are numerous communities where the purity of drinking water is dependent upon sewage treatment in other communities upstream. It is a just obligation upon each community to see that its wastes are so treated or disposed of that they do not contaminate their own water supply or that of other communities. An adequate sewerage system with a modern sewage disposal plant is urgently needed in hundreds of communities.

The need was recognized by the Federal government which allotted $133,000,000 of the Public Works funds for sewage disposal projects that were deemed essential. Millions more could be spent to good advantage but unfortunately worthwhile projects are destined to lie dormant through lack of public support. The apathy of the public toward projects of such vital concern is amazing. Let some one with a communicable disease expose others and we immediately and emphatically demand isolation of the individual, but we are not equally insistent, in fact very little concerned, when thousands are exposed to water borne disease caused by unsanitary disposal of wastes.

More active interest is needed in matters of such vital importance in our daily lives as safe sewage disposal. A modern sewage treatment plant is an inexpensive utility. It can be made attractive in appearance and free from odors. We need more of them and we cannot well afford to be without them.

:: :: ::

NO ONE in authority expects very much out of the Federal home repair and modernization plan this year. Government officials are not saying so publicly, but they have their eyes set on stimulating new construction next year, using this means to supplant the public work program, which will then be about completed.

Prices of manufactured goods generally will probably ease off in relation to other prices, which may help to spread a larger volume of consumption.

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JULY
1934

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MARSH, SMITH AND POWELL, ARCHITECTS

THE ARCHITECT AND ENGINEER

JULY 1934
VOLUME 118
NUMBER ONE

School

by Homer M. Hadley*

THERE being the full number of schools that there is in the world, it is most natural that at the outset of a brief description of one of them the question should be asked: "But why write or tell of another school? There are so many, many schools already, and most of them are very much alike, structurally and architecturally. They may vary in size and in arrangement of rooms and parts, but in general plan and style they are monotonously alike. Why write of one school more?"

The best answer to this query is in the accompanying illustrations. The George S. Stoneman School at San Marino is deserving of attention and consideration for the manner in which it so happily and pleasingly meets the problem of a small elementary school to be placed in a residential district of comfortable homes and beautiful gardens.

ARCADE, GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

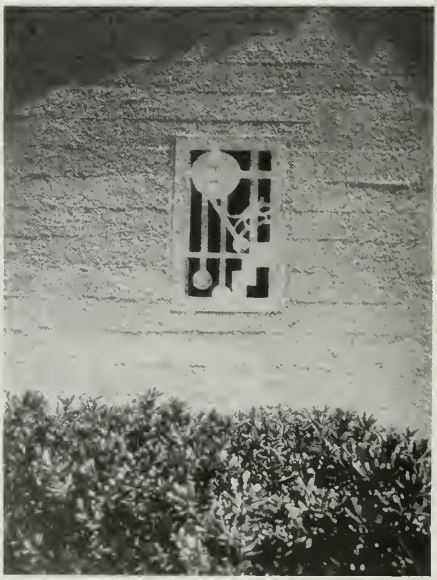
The illustrations quite clearly indicate how nicely and how inconspicuously the building fits into its environment. It is low and it rambles widely over grounds which fortunately are of generous size. Its tower is low and substantial, it is surrounded by lawn and shrubbery, and blank rectangular walls cut with blank rectangular holes for blank rectangular windows are, thank Heavens, absent. It is a school imbued with the attractiveness and charm of a pleasant home, suggestive of happy

*Regional Structural Engineer, Portland Cement Association.

TOWER SIDE OF GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

relationships between teachers and children rather than of a rectangular sort of discipline imposed willy nilly on hapless youngsters by a Greater Force.

What is nicer than the happy fancy of the grilles? Here are variously shown many of the most notable characters of childhood. Bo Peep, crook in hand, anxiously searches for her wayward sheep. The cat and the fiddle, the mouse that ran up the clock, the fox and goose fill other panels. And the piper of Hamelin town swings forward with such a springy step, with such dancing notes coming forth from his pipe, that it is no wonder the rats throng forward with him, crowding almost under his feet.



GRILL—DETAIL—"THE MOUSE RAN UP THE CLOCK"

And why should more schools not be like this? Why all the pinch-penny boxes? Ah, but we cannot afford them! We cannot afford them! Perhaps not, but again perhaps, as with most things in life, we do not have the resolute will to have them.

Assuredly this much is true: as long as we have a continuance of human life, as long as we have an organized society, so long will there be a continued need for schools where to the young may be imparted knowledge and, be it hoped, a modicum of wisdom and understanding. The need for schools is continuous and unending.

And the educational processes themselves have after innumerable generations of experience attained a form which is fairly constant and is not subject to sudden

GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

revolutionary change. There may be chatter and patter about change but there is little probability of its sudden occurrence in education. Because we have witnessed great changes in water power development or in earth-moving machinery does not establish the fact that equally great changes in the fundamentals of human life are imminent. The requirements with respect to schools as to size and seating capacity of rooms, as to the desirability of good light and temperature control and ventilation and similar matters, are pretty well established. It is difficult to conceive of changes that would affect these basic needs.

So there is sound warrant for good substantial construction in school buildings and for the employment of fine sympathetic architecture in their planning and arrangement. We deal with intangibles yet who can gainsay the value of surrounding children with the outward evidences of life's worth, reality, and possibilities of grace and refinement?

The George S. Stoneman School is roughly L-shaped in plan, 234 ft. by 132 ft. in extreme overall dimensions. It has six classrooms, a 3-unit kindergarten, a combined cafeteria and kitchen, 3 administration rooms, corridors, toilets, etc. There is a basement underneath the kitchen. The school contains slightly over 275,000 cu.ft. The total cost of the contracts, general, electrical, plumbing, etc., was $67,031. This results in a unit cubic foot cost of about 24 cents, a very reasonable figure considering that the contracts were

ALCOVE OF KINDERGARTEN, GEORGE S. STONEMAN SCHOOL

DETAIL OF GRILL—"THE PIED PIPER", GEORGE S. STONEMAN SCHOOL, SAN MARINO, CALIFORNIA

MARSH, SMITH AND POWELL, ARCHITECTS

KINDERGARTEN, GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

KINDERGARTEN WING, GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

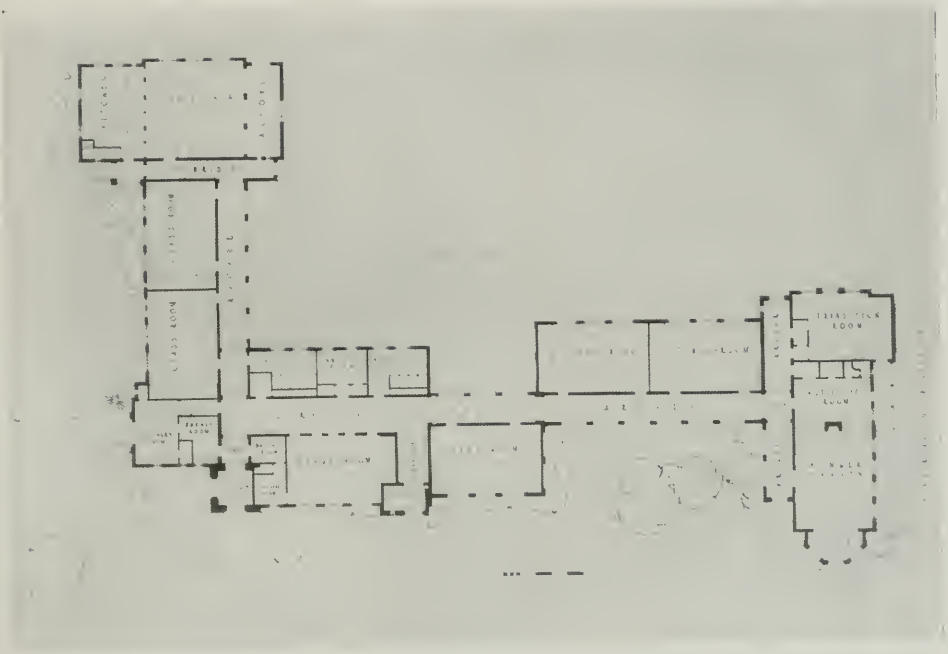
DETAIL OF GRILL, "BO-PEEP", GEORGE S. STONEMAN SCHOOL, SAN MARINO

Marsh, Smith and Powell, Architects

LOWER PICTURE—DETAIL OF GRILL, "THE FOX AND THE GOOSE,"

GEORGE S. STONEMAN SCHOOL, SAN MARINO

Marsh, Smith and Powell, Architects



PLAN, GEORGE S. STONEMAN SCHOOL, SAN MARINO
Marsh, Smith and Powell, Architects

awarded in December, 1929, when costs were practically at their peak.

All walls are of reinforced concrete. The exteriors are lightly dashed, as our illustrations show, with a stucco of a fairly pronounced tan color. The concrete construction is slightly concealed but with the form marks plainly showing is nonetheless evident. A structural concrete floor was used throughout most of the building. The roof is framed with light built-up wood trusses which carry the pleasantly-toned clay roofing tile.

An interesting consequence of the substantial construction employed came at the time the building was examined by the State Department of Architecture, after the Long Beach earthquake. It was found to comply almost completely with the legal requirements for strength and resistance to horizontal forces. The expenditure of a few hundred dollars for strengthening some roof framing and connections was all that was necessary to bring it into full conformity with legal standards. It had been well built at the outset so it did not have to be built all over again or be expensively repaired.

Messrs. Marsh, Smith and Powell at Los Angeles were the architects.

A CHEERFUL LIVING ROOM IN A PALATIAL PIEDMONT HOME

Betrayed

by Electus D. Litchfield, A.I.A.

THE successful practicing architect is of necessity a man of imagination, technical skill, practical business experience and executive ability. Not every architect has all these qualifications and few have them evenly developed. It will be generally agreed, however, that a fertile and highly trained imagination is one of his essential characteristics and that in the successful architect this is in some strange way combined with a very practical nature. These qualities are, to a certain degree, antagonistic, and for this reason there is to be noted in the architectural profession as a whole, most contradictory impulses and actions.

The financial return of the architect's profession is, and always has been, so meagre and insufficient that in pure self defense the average architect tends to become selfish or at least self assertive, not so much from his desire to gratify his personal wants, which are, in large measure, satisfied by the opportunity to create the beautiful, but because of the insistent and wearing demand made upon his reserves by the pay roll and overhead of his office, together with the maintenance of his home and family in that state of life in which the architect must move. Vitruvius complained that the choice architectural commissions were not awarded to the artists of outstanding ability, but to those architects of his day who, through social or other contacts, had the emperor's ear. An architect without social and business contacts is an architect without work. Successful painters in the past, and sometimes even in these practical modern days, have by their outstanding ability enlisted the patronage of the great, who for the time at least have placed them beyond want. There are architects of our own age and generation who have been equally fortunate, but by and large the average successful architectural career is based on professional skill, an interesting personality and broad business and social contacts.

The very fact that the carrying out of a great architectural commission calls for a large office staff demands the development in the architect of many of the characteristics of the so-called "hard-headed" business man; but once let him be relieved of the immediate demands of his office and family and he tends to become altruistic to a fault. His business sense is, to a certain degree, grafted upon the artist stock. and so we find him satisfied with the doing of a great piece of work, if only his immediate bills may be paid, and blind to the days to come, when the great commission shall not be at hand.

EDITOR'S NOTE—Mr. Litchfield's paper was one of the outstanding features of the recent A.I.A. Convention at Washington, D.C. The author was given a tremendous ovation for his splendid contribution. What Mr. Litchfield said about the architect and his sorrowful plight is all too true. It is not strange, however, that the newspapers have failed to come to the rescue of the profession as referred to by Mr. Litchfield in one of his closing paragraphs. The tendency of the profession has been to minimize the importance of the press. Many architects do not appreciate even their own professional journals. The ARCHITECT AND ENGINEER, for example, has devoted thirty years to encouraging and promoting good architecture, with little show of appreciation by those who have been benefited except on rare occasions. When the profession shall display a more kindly attitude toward the press, then and not until then, may it expect to have the help it so desperately needs in these days of gloom.

We find him, too, impatient as a class in matters concerning the relation of his profession to the public, of those motives which would seem to be at all charged with selfishness. The important thing to him is that the public work shall be done as it should be done; that a structure appropriate and practical be assured; that a real work of art shall be created. Fundamentally, it is much more important to him that the work shall be done well than that some one shall make a living out of the doing of it.

Granted that in some mysterious way the payment of his bills could be guaranteed, he would joyously undertake the design of some great structure without promise of personal pay, amply satisfied with the joy of creation. What a strange combination! This practical, scientific person interested in the production of a great building which shall cost not a dollar more for its construction than is reasonably right, jealous of the rights of his client, carefully watchful that no injustice shall be done to Contractor or to Labor, covetous to a crime for the opportunity to undertake some great commission and absolutely thoughtless of self in the service of beauty. In the days of this Depression he has given liberally of his time and effort in aid of the socalled unemployed architects, struggling meanwhile helplessly and fruitlessly for work, where no work is, to provide the means to pay his own office and family's bills.

It has been repeated so often by those in high office that building construction fostered by private enterprise has ceased, and that as a measure of recovery the Government must come to the aid of the building industry,—that he assumed as a matter of course that the authorities had thought of the architect as the first to be considered in the relief and the resuscitation of the industry. With the repeated announcements of the great public works program, the Architect felt that his position was understood, that the authorities recognized his need and that everything possible would be done in the way of enlisting his services and of placing him in position to keep his staff with its years of training out of the ranks of the unemployed.

But he finds that *his* need has been completely forgotten. Meanwhile, under the P. W. A., fabulous sums are set aside by the United States Government for construction; 75 to 80% of it, however, is turned over to road building, dams, and other heavy engineering construction projects; and where these have involved what should be counted the most important of architectural problems — slight consideration has been given either to the contribution, which thoroughly trained and equipped architectural organizations could make, or to the opportunity offered to the Federal Government to assist in holding together those architectural offices and organizations to whom the country is indebted for the leading place that contemporary architecture in America holds among the nations of the world. Without work these organizations must disband. Many of them have already done so. Private work of any volume does not exist. If the offices are to be maintained, it will be only because there is placed with them a reasonable proportion of public work.

For Boulder Dam an expenditure of $165,000,000 has been authorized by the Government; for the Casper Alcova Project, $22,700,000; for the Grand Coulee Columbia River Valley dam and development, $63,000,000; $250,700,000 in all of these three enterprises, including the design of great dams and power houses requiring the highest architectural skill and good taste if they are to have the dignity and simplicity appropriate to the vastness of the undertaking, and the noble and rug-

ged character of their sites. Included in these projects is the design of three towns or cities—one at least of which is to be permanent — for which special training and experience in town planning should be required. For all this vast work and responsibility the Interior Department finds it "most convenient" to employ a single architectural consultant to give occasional advice.

We all know what has been happening more nearly at home. Private construction work ceased some years ago. Public work has been slow in starting—one by one the draughtsmen have been let out of the Architect's offices — first the younger inexperienced men and then the older, more valuable, more irreplaceable assistants. The cry of the unemployed was heard in Washington and the C. W. A. organization was set up. Again and again, to find work for them, enterprises which in normal times would have been turned over to the practicing architects—and some, indeed, upon which practicing architects had already started—were turned over for design and construction to groups of C. W. A. employees. In some cases this was possible only because among them were assistants fresh from years of training under leaders of the architectural profession who could have kept them, if the work had been placed with them. Again in other instances, similar to the great western water power projects, a single practicing architect has been employed at a salary to act as supervising consultant over vast municipal undertakings. In one or two places, as in Pittsburgh, the practicing architects have been able to arouse the public to an appreciation that a continuance of such a practice will result in the practical extinction of the architectural profession; and they have said: "This shall not be"—but generally speaking the condition continues to exist all over the country. It is particularly so in New York where the financial condition of the city makes the problems particularly difficult.

In one way or another—of course without intention — everything seems to have been done contrary to the interest of the practicing architect. For reasons best known to the Coordinating Committee of the Government, the appropriations promised for Post Offices and other Federal buildings were first held up, then many entirely cancelled and the projects abandoned while most of those which survived were drastically reduced in appropriation. Word to proceed on many, if not most of these undertakings, has been delayed without explanation while architects under contract to prepare the plans stand helplessly by, while office rent and salaries bite fiercely into their dwindling reserves.

Housing and Slum Clearance appeared on the Government's program, and for a while were thought to be a life saver for the practicing architect. A year has passed and twelve projects only have developed to provide employment for a mere handful of men; and on these the fees have been chiselled to the point where the architect cries out in despair.

Do the authorities—does the President, understand the situation which confronts the architectural profession? Do they realize that it is only those offices that have had Public Commissions which antedate this Administration,—or the very minute few that have had them from this, — and those which have had generous reserves resulting from a successful practice in the past—that have been able to continue till today?

How many can survive to a reasonably distant tomorrow will depend on an immediate revival of private work or on our Federal, State, and Municipal Governments;—but above all on the Federal Gov-

ernment, for the first and last word is with it.

Let the President direct that on all contemporary building, — construction, modernization, or reconstruction, for which Federal funds are loaned or appropriated under the Recovery Act — an architect in private practice shall be employed at the minimum rates which experience has shown to be fair. If this is done the first and fundamentally necessary step will have been taken.

Let him not "defer until next year" as was reported as his intention in a news despatch from Washington dated April 19th, "a broader program for mass home construction and slum clearance"; but let him by Federal authority and by encouragement, in every way possible, of participation by the banks and private loaning agencies, push forward the economically sound mass production of low cost new housing construction.*

I have spoken of the strange compound of practical and spiritual qualities that make up the architects' nature, for it is only by remembering this, that one can understand how, without a word of protest in the daily press of the nation*, our great profession has allowed itself in its hour of sorest need to be betrayed in the house of its friends. Must we always be so afraid of being accused of self-seeking that we are not willing to come out boldly in the demand that the rights and needs of our profession shall be respected and protected? The American Institute of Architects is not a labor union and it has been truly said that it does not exist to get jobs for its members, but with the life of the profession at stake the time has come when in the name and in the interest of Architecture in America the Institute should appeal directly to the White House for help.

Does the seriousness of the situation mean nothing to the nation at large? Has every one forgotten the halycon day of American Architecture in the early years of the last century—when monument after monument of early American architecture was created—and of what happened in the fifty dark years that followed the panic of 1837?

No one — if they understand, will approve of a false economy which if pursued will be the death of our great profession.

It is time that we called a halt.

We must be heard.

*Since this was written the President has signed the Housing Bill which provides for a large expenditure of money for urgent housing needs.

HISTORIC

AMERICAN BUILDINGS SURVEY

National Park Service

U. S. DEPARTMENT OF THE INTERIOR

District No. 38

Irving F. Morrow, *Architect*

District Officer

PORTFOLIO No. TWO

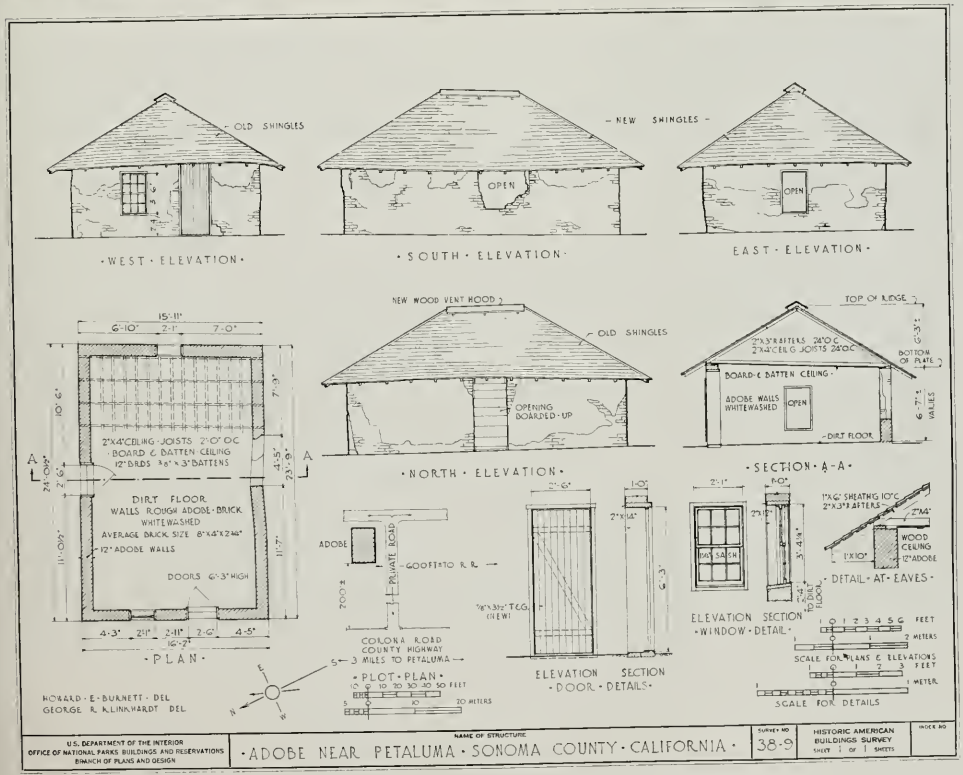
Small Adobe House and Mining Town Hotels

Photographs by Roger Sturtevant

PICTURE ON THE RIGHT IS OF AN ADOBE HOUSE, NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA. THIS BUILDING WAS ERECTED ABOUT 1834 AND USED BY GENERAL VALLEJO.

MEASURED DRAWING OF THE ABOVE ADOBE HOUSE, NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA.

HOWARD E. BURNETT, DEL.
GEORGE R. KLINKARDT, DEL.



U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS BUILDINGS AND RESERVATIONS
BRANCH OF PLANS AND DESIGN

NAME OF STRUCTURE
·ADOBE NEAR PETALUMA·SONOMA COUNTY·CALIFORNIA·

SURVEY NO 38-9

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 1 SHEETS

INDEX NO

PICTURE ON THE RIGHT. LEGER HOTEL AT MOKELUMNE HILL, CALAVERAS COUNTY.

THIS HOTEL IS ONE OF THE FINEST EXAMPLES OF OLD TOWN HOSTELRIES WITH WHICH THE SURVEY CAME IN CONTACT.

LOWER PICTURE ON THE RIGHT. AMADOR HOTEL AT AMADOR CITY, AMADOR COUNTY. A CHARACTERISTIC EXAMPLE OF WOOD BALCONIED TOWN BUILDING.

PICTURE ON THE RIGHT, THE ITALIA HOTEL, SONORA, TUOLUMNE COUNTY.

ORIGINALLY, AS EVIDENCED BY OLD PHOTOGRAPHS, THE TWO-STORIED COLUMNS CARRIED A BALCONY AT THE SECOND FLOOR LEVEL.

LOWER PICTURE ON THE RIGHT, HOTEL AT DOBBINS, YUBA COUNTY.

ORIGINALLY PLANNED FOR FAIRLY EXTENSIVE ACCOMMODATIONS, THIS BUILDING IS NOW GOING TO DECAY IN A PRACTICALLY ABANDONED COMMUNITY.

GOOD PLANTING HAS ADDED NOT A LITTLE TO THE APPEARANCE OF THIS SEVERELY PLAIN ENTRANCE

Architectural Education

by Ellis F. Lawrence, A. I. A.

The trend of the times, with particular reference to architectural education, is reflected graphically by Ellis F. Lawrence, distinguished Portland architect, in a recent report to the Association of Collegiate Schools of Architecture, of which he is president. The report was submitted by Mr. Lawrence at the 20th meeting of the Association held in Washington, D.C., May 14th. The Portland architect alludes to our social, educational and financial upheaval and calls attention to the none-too-encouraging outlook. Schools and colleges sponsoring architectural courses are facing conditions more trying than for many years past.

ARCHITECTURAL education has not escaped criticism. The profession and registration boards have taken plenty of shots at it—many of them no doubt deserved, but more of them not so. Smarting a bit, the schools are trying to make their training more realistic, their product more practical. Let us not go too far in this lest we lose the more precious thing. Let us remember our long held conviction that office practice is an obligation of the profession, and should supplement the schools in preparation for practice, and that our function is to train in theory, ideals and scholarship. Let us now consider anew just what the function of the school is to be in a well formulated preparation for practice.

As to the Profession, the educators are perplexed as to where it is heading. Until it clarifies its objectives, how can the schools determine their course and duty? Why train for ethics and the professional ideal, only to have our students return to us disillusioned after a few years out in the field with stories of what they face to make a living and to use the talents we have sought to develop in them. They find too often, the traveling salesman architect, the free sketch men and solicitor: the reality agent paid for bringing in the work; and other flagrant violations of the code. They find, frequently, valiant fighters for the Institute ideals left by the wayside—in poverty, with only the less important building operations left to them. They complain that no profession plays a smaller part in shaping public policies than do the architects. This is no exaggeration. I say these things from my own experience.

Is the architect of the future to be a salaried man, controlled by government or the corporation? Is he to abrogate the professional ideal and go in for big business? Is he to turn entrepreneur or promoter—perhaps serving himself as client? Is he to turn back to the old ideals of personal service or retain the plan factory? The educators alone cannot answer these questions. The profession must, before preparation for practice can be solved. What kind of practice are we preparing for any way?

Should Age Abdicate to Youth?

I am not sure but that it would be the sporting as well as the wisest thing for all of us of the old guard over forty, to abdicate in favor of the younger crop of architects — the product of the schools. Their avowals sound promising, for many have said to me, "There is nothing left for us young fellows to do but to clean up the mess." Such is the opinion of youth. Knowing them as I do, I somehow feel they will do a good job of it.

Regarding registration, the Institute early found itself divided with the result that the advocates were obliged to fight out their cause with too little assistance or guidance from the profession. Some states are still holding out against it. But whether or not we like it, Registration and licensing are with us. Over 37 states, I believe, have adopted the system designed to protect the public against incompetent and unscrupulous practitioners. The registration boards are trying to do a good job. They need the help of the educators and the profession.

I know, some will say "It was a mistake to surrender to government and politics the determination of who could practice architecture," or "To license artistic ability is absurd", or "Registration brands us all as equals". Some seem to think registration boards are trying to stop men from entering the profession. But others who have been close to the problem believe the boards are doing a fine constructive job.

However, this is not all. There are the years between graduation and registration, during which the training of the future architects will continue to be ignored or exploited by the profession, or be sympathetically directed by it. Which shall it be?

Profession Faces Grave Menace

The profession, the registration board, and the educators are all vitally interested in this problem. No one element alone, can solve it. There is a constant overlapping of function. Each must draw upon the others, if the profession is to be properly and efficiently served. I will go further, and assert that the profession, as such, cannot long survive without meeting this; its greatest obligation. If it does not, the profession we have loved will slip into something different before we know it.

In March, I happened to see in the Technology Review, a statement from the report of the American Association of Collegiate Registrars showing that while 581 institutions had a decrease in enrollments since 32—'33 of 3.6%, architecture showed a gain of 17.2%.

This was such an amazing statement, I realized how little your officers knew of what was going on in the schools. Therefore, I sent a questionnaire to member schools. Twenty-eight answers have been received. One, only, reported an increase in enrollment. Of the other 27, shrinkages reported from the peak were as follows: one was 5½%, (however, many were part time students, otherwise the percentage would have been much larger); two were between 10% and 12%; five between 20% and 25%; 1 was 27%; four between 30% and 35%; one was 36%; six were between 40% and 45%; six were 50%; one was 63%. As was to be expected, a marked increase in graduate enrollment was reported. Some not offering graduate work before, were now obliged to offer it.

Scores of well-trained men are seeking teaching positions, many of them being experienced and highly recommended. During the depression, many have been dismissed.

Generally the morale of the students is reported as good, tho some testify that seniors are seriously affected by the uncertainties ahead. More seriousness and earnestness is evident.

Tragic Stories of Diminished Incomes

The stories of salary and budget reductions are tragic. Eight have had no cuts, tho some of these have maintained the salary base by discharging members of the staff. Of the remainder, cuts in salaries from 10% to 40% were listed. In one Western university, the staff, after two heavy cuts, each donated one month's salary to keep one of the staff members employed. Budgets also have been cut to the core; one as high as 50%.

Scholarship loan funds prove to be inadequate and have generally been exhausted. In two institutions, the staffs voluntarily subscribed from their salaries to keep worthy students in school. Here might well be an opportunity for the Educational Committee of the A. I. A. to establish a needed help to worthy students thru endowment or gift funds.

The answers indicate clearly how much life is in this organization; how keenly aware the schools are of changing conditions and how they are striving to meet the inevitable criticisms that come in such times as these. For obvious reasons, I should not identify schools or individuals in the following summary.

Nineteen schools indicated revisions leading to stronger training in construction. Several felt the great weakness in the system that was lack of reality in the work. Among methods adopted to better correlate design and construction and give a sense of reality, were study of nature of materials; carrying at least one design project thru complete working drawings and specifications; three years of professional practice tied to design courses. Each design problem in its principle features carried to partial work drawings. Using constructors, engineers and designers as critics; making of models and elimination of architectural engineering as such. One is attempting to revise the teaching of design to approach officer procedure.

Change of Courses Proposed

One is seeking to revitalize existing courses. Two others recognize the importance of breaking down separate courses into one great subject "Architecture". Two have introduced city planning courses and one, housing.

One complete revision is reported summarized as follows:

"1. Higher entrance (only upper 2/3 rating in high-school accepted).
2. Higher graduation requirements; averaging 5 year course with final thesis.
3. Abolishment of architectural engineering as such. Setting up a common curriculum of which all take 3/5 of the work; 1/5 for a choice of design or engineering; and 1/5 elective.
4. First year — called a Preparatory Course — drawing and conferences with architectural staff are the only professional courses included.
5. Second year design starts with realistic design problems of small but complete buildings."

Competitions and Cast Drawings

This comes from one school. "Elimination of competitions and honors; each student works on a different program; (suitable to his own personal advancement; staff freed from interference with pedagogical methods; students self governing; collaboration among the allied arts; execution before theory is taught; organization on a horizontal basis, in place of the old vertical compartmentalized system, thus bringing design, construction, landscape, interior and the crafts into one harmonious unit of effort; all these are the ideals we seek to practice."

One reports little or no cast drawing is now given and greater use of charcoal, it

being cheaper. The same school now covers Architectural History in the first year — using the second for American and Modern Architecture. Another reports having tried the experiment of having third year history students give their own courses in Oriental Architecture. In one school, an attempt is made to bring the best contemporary foreign views to the student through translation. Six appear to accept the status quo, while another is urging "more social and moral ethics" as its goal — mental attainment and the making of (cultured gentlemen) of the students. The same writer thinks time is not the issue; one student may do it well in 4 years, another in 5 or 6. One sees no possibility of making the change to the 5 year course for two or three years at least. Others report success in making the change. To quote from other replies:

"Since we dropped out of the Beaux-Arts program two years ago we have developed the following changes in our methods of instructions in the College. In fact, the contemplation of these changes was the determining factor in our giving up the Beaux-Arts work.

An Esquisse-Esquisse

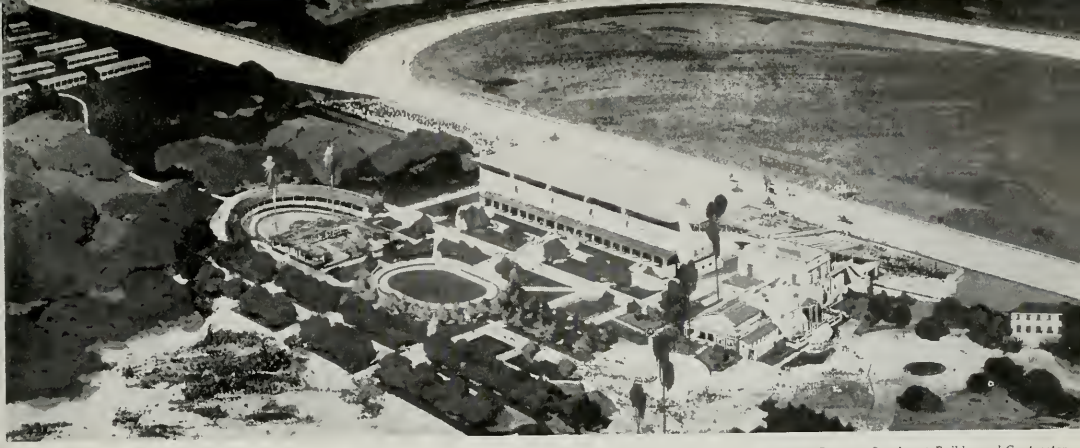
"Throughout the school we have adopted the practice of a one-week esquisse or preliminary sketch. Criticism and use of documents is permitted. In other words, the first week of the problem is a serious study of the general principles involved and the various possible solutions, just as would be done in actual practice. At the close of the week the student turns in his esquisse in the form of an esquisse-esquisse. This represents a good workable scheme to which he is held during the remaining study and elaboration of problems. The training that was otherwise offered in the old esquisse we believe can be given in a series of sketch problems. We still believe in judgments and the competition of students on the same problem. However, we do not seriously consider the results of these judgments in our grades. We believe that only the patron who has worked over the drafting boards with these students knows when they have acquired the necessary fundamentals in order to be allowed to enter the higher division. We are trying to make this purely a personal matter between the critic in each class and the students. We advance students regularly at the end of each term; but we never hold them back from advancement in the course if they and the instructor feel that they can profit by entering in the next class.

"We are now giving three years of what we call professional practice. This comes in the third, fourth, fifth years, and it is definitely tied in with the design courses. In almost every project we require the student in professional practice to carry out certain important features of his design in working drawings, etc. We do not find that this in any way hinders the development of freedom and imagination in the design problem; but it does tend to make the student think in terms of actualities as he "spreads himself" in his design course. It is not in any sense of the word our intention merely to equip students for the office, although we do believe that this early training in draftsmanship will be appreciated by the offices which first employ our students.

Drop All Analytiques

"We have dropped all analytiques as such and are giving problems which cover this ground in later years in combination with the history courses. The student approaches the study of architecture in his first year by taking simple problems in design which he can comprehend. We lay no stress whatever upon drawing or draftsmanship in this course, but by the simplest

[Please turn to Page 49]



Courtesy Southwest Builder and Contractor

Perspective of racing plant for Los Angeles Turf Club at Santa Anita Park, Arcadia. Administration building shown at extreme right with clubhouse and grandstand along the home stretch . Open air paddock is directly back of stand with saddling stalls arranged in a semi-circle on the left. Stables at extreme left.

Race-Track

BOTH San Francisco and Los Angeles are to have new racing plants this fall—the natural sequence to a State Racing Law and a State Racing Commission with provisions for legalized betting. In Southern California the site of the old Baldwin race track is being converted into a modern race course by the Los Angeles Turf Club. The plant will consist of a one-mile track with a three - eighths chute and a seven - eighths chute for running races of uneven distances, a grand stand with seats, including boxes, for 6000 people and a wide terrace in front where 15,000 more may stand, a large clubhouse for members, stables with 1350 stalls and all the accessories of a modern racing plant.

The site slopes toward the northeast and there was a wash on the lower side which necessitated extensive fills to bring it up to the general level. The track is partly in cuts and partly in fills, the width on the back stretch being 80 ft. and on the home stretch 85 ft. Surface soil on the site is a sandy loam suitable for a fast track. Below this there is sand and gravel and where it was necessary to excavate below the top soil the latter was removed to be later respread on the surface of the track. An extensive fill was also made in building up the terrace in front of the grand stand.

Grading operations were started about April 1. Construction of the foundations for the grand stand and the clubhouse have been started, and contracts call for completion of the plant by December 1, the first

Courtesy Southwest Builder and Contractor

Perspective of grandstand for racing plant of Los Angeles Turf Club, Arcadia. Drawing shows stand from the rear. Panels of pierced steel depict racing scenes. Paddock is shown in foreground at the left. Lower picture is architect's perspective of clubhouse. Office of Gordon B. Kaufmann, architects. Lindgren and Swinerton, Inc., contractors.

races being scheduled for the 25th of that month.

The layout for the grounds and the racing plant has been carefully studied and it is regarded by experts as exceptionally good from every point of view. Special attention has been given to the landscaping. There will be two entrances, one off Huntington Drive and the other off Colorado Boulevard. The grand stand will be on the south side of the track with the clubhouse adjoining on the east and the paddock and the saddling stalls back of the stand. The stables will be west of the grand stand and separated from it by a landscaped area.

The grand stand will be 390 ft. long and 110 ft. deep. There will be a basement under the entire stand with the main betting ring on the floor above. There will also be a mezzanine with a betting ring for women and the upper grand stand spectators. Construction will be reinforced concrete up to the main betting ring floor. Above that it will be structural steel, unfireproofed. The benches and risers for the seats will be reinforced concrete. Extending across the entire back of the stand in two rows will be a series of pierced steel panels illustrating racing scenes.

The clubhouse adjoining the grand stand will be 100x175 ft. It will have a basement for utilities. On the first floor will be the betting ring and lounge, bar and dining room with dining terraces and kitchen. A mezzanine will provide dressing rooms for women and also space for utilities. On the second floor there will be a private room with foyer for the club members. A small private grand stand for members, with seats for 300 or 400, will be provided in front of the clubhouse. The two-story portion of the clubhouse will be reinforced concrete construction with stone tile veneer. The one-story section will be frame construction with stone tile veneer. There will be a glazed shingle tile roof for the entire building.

The administration building will be 50x65 ft. On the first floor will be the executive offices and a room for track registering and entries. Quarters will be provided on the second floor for jockeys and off this will be a small loggia from which they may watch the horses. This building will be frame and plaster construction.

Directly back of the grand stand will be an open air paddock and to the west of this the saddling stalls arranged in semicircle.

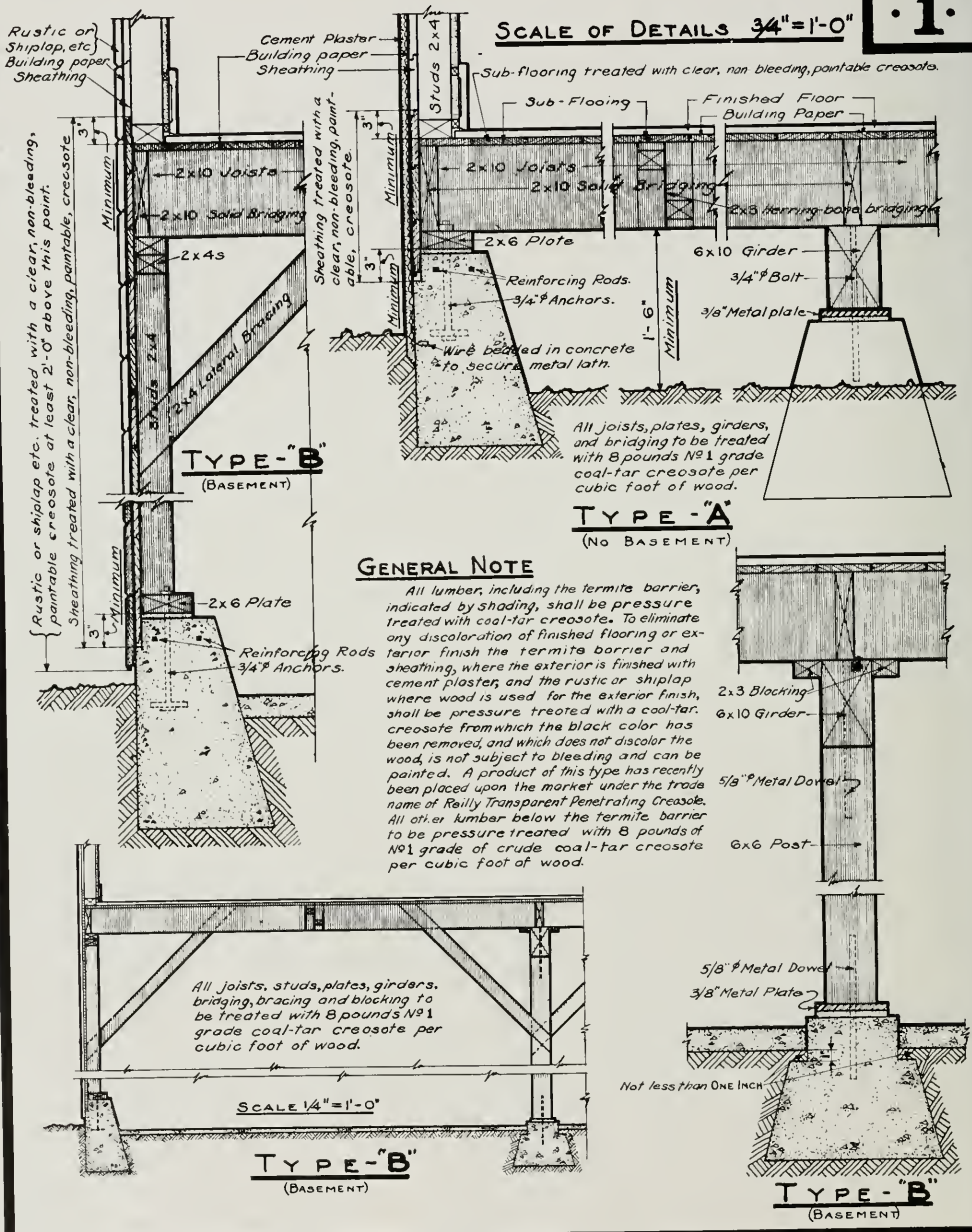
Stables will be provided for 1350 horses. There will also be a cooling shed, mess hall, blacksmith shop and equipment sheds. Stables will be of board and batten construction with low-pitched composition roofs. Most of them will be in units 187x48 ft. each with 26 stalls and 4 tack rooms. A few units will be 312 x 48 ft. with 46 stalls.

The terrace in front of the grand stand will be surfaced with asphaltic concrete with benches 5 ft. wide and rises of 5 in. to 10 in.

There will be parking space for 12,000 automobiles.

PLATE

1


SCALE OF DETAILS 3/4"=1'-0"
Rustic or Shiplap, etc.
Building paper
Sheathing
Cement Plaster
Building paper
Sheathing
Studs 2x4
Sub-flooring treated with clear, non bleeding, paintable creosote.
Sub-Flooing
Finished Floor
Building Paper
2x10 Joists
2x10 Solid Bridging
2x8 Herring-bone bridging
2x6 Plate
6x10 Girder
3/4"ϕ Bolt
3/8" Metal plate
Reinforcing Rods.
3/4"ϕ Anchors.
Wire bedded in concrete to secure metal lath.
Minimum
1'-6"
All joists, plates, girders, and bridging to be treated with 8 pounds No 1 grade coal-tar creosote per cubic foot of wood.
TYPE-"A"
(NO BASEMENT)
Rustic or shiplap etc. treated with a clear, non-bleeding, paintable creosote at least 2'-0" above this point.
Sheathing treated with a clear, non-bleeding, paintable, creosote
2x4s
2x4 Lateral Bracing
Studs 2x4
2x6 Plate
Reinforcing Rods
3/4"ϕ Anchors.
TYPE-"B"
(BASEMENT)
GENERAL NOTE
All lumber, including the termite barrier, indicated by shading, shall be pressure treated with coal-tar creosote. To eliminate any discoloration of finished flooring or exterior finish the termite barrier and sheathing, where the exterior is finished with cement plaster, and the rustic or shiplap where wood is used for the exterior finish, shall be pressure treated with a coal-tar creosote from which the black color has been removed, and which does not discolor the wood, is not subject to bleeding and can be painted. A product of this type has recently been placed upon the market under the trade name of Reilly Transparent Penetrating Creosote. All other lumber below the termite barrier to be pressure treated with 8 pounds of No 1 grade of crude coal-tar creosote per cubic foot of wood.
2x3 Blocking
6x10 Girder
5/8"ϕ Metal Dowel
6x6 Post
All joists, studs, plates, girders, bridging, bracing and blocking to be treated with 8 pounds No 1 grade coal-tar creosote per cubic foot of wood.
SCALE 1/4"=1'-0"
TYPE-"B"
(BASEMENT)
5/8"ϕ Metal Dowel
3/8" Metal Plate
Not less than ONE INCH
TYPE-"B"
(BASEMENT)

DETAILS OF TERMITE BARRIER.

TO PREVENT DAMAGE BY GROUND-DWELLING TERMITES.

THE ARCHITECT AND ENGINEER.
JULY, 1934.

PREPARED BY
HARRY W. ABRAHAMS
ARCHITECT AND CIVIL ENGINEER

Termites

by A. A. Brown, C. E.

THE statement has been made that the use of pressure treated lumber as specified by the Termite Investigations Committee places a very heavy burden of expense upon prospective home builders. The committee's specifications for prevention and control of damage in buildings by termites from the soil require: "(c) A termite barrier, as described in section (e), shall be installed in the building, and all wood between such barrier and the ground shall be No. 1 common or better grade of lumber which is impregnated by pressure treatment with a final retention of not less than eight (8) pounds of No. 1 grade of coal-tar creosote per cubic foot of wood, the grade of creosote and the method of treatment being in accordance with specifications of the American Wood-Preservers' Association, or such wood shall be No. 1 common or better grade of lumber which is impregnated by a pressure treatment with such other equivalent preservative and equivalent method as may hereafter be approved. Such wood shall be completely framed before treatment whenever this is possible, and when it is not possible, the surfaces exposed by cutting after treatment shall be thoroughly coated with at least two coats of hot coal-tar creosote or other equivalent preservative.

"(e) The termite barrier specified in section (c) shall be so constructed as to completely cut off all access of termites from the ground to all untreated wood above said barrier. The barrier shall be made of material impenetrable by termites. such as reinforced concrete, non-corrosible metal, metal lath and plaster, or tongue and groove or shiplap wood pressure-treated as specified in section (c). All wood between this barrier and the ground shall be pressure-treated as specified in section (c).

"Floor joists shall have a clearance of not less than eighteen (18) inches between the joists and the surface of the ground underneath. The ground underneath floor joists shall be leveled or smoothed off so as to maintain a reasonably even surface under the entire area covered by the floor joists."

The accompanying details, Plate I, have been prepared in accordance with the termite committee's specifications as applied to home construction of moderate cost. Lumber pressure treated with Reilly Transparent Penetrating Creosote to be used in the termite barrier or shiplap sub-floor and in sheathing under the outside stucco which eliminates any danger of discoloring the finished flooring or plaster walls. All other lumber below the termite barrier

to be pressure treated with crude creosote. In a building so constructed all the untreated lumber above the termite barrier is positively protected against damage by termites coming from the soil.

The cost of this protection is about 9½ cents per square foot of first floor area for houses without basement and with cement plaster exterior. Where rustic or ship-lap is used for exterior finish the cost is approximately 10½ cents per square foot. If the distance between the underside of the first floor joists and the top of the ground is to be more than 18 inches to provide for garage or basement space or for hillside construction add 7 cents for each square foot of additional outside basement wall area, where exterior is finished with cement plaster; add 8 cents where rustic or ship-lap is used for exterior finish. The added cost for a cottage of 1,000 square foot area is approximately $95.00.

Where the black color is objectionable, wood treated with the refined creosote, which does not discolor the wood, can be used at an additional cost of 2½ cents per square foot floor area.

Cost of Some Recent Jobs

Some recent termite repair jobs in San Francisco have cost from $165 to $900. A termite control operator in San Diego reported to the Termite Committee the average cost of repairing some 440 structures as $269.38 each. These latter figures do not include sums spent on rehabilitation of structures, such as re-plastering walls, painting, or other items not directly due to damage by termites.

The pressure treating of all foundation lumber in building provides additional security in a region where the earthquake hazard prevails. Considering the damage caused by the recent earthquake at Long Beach, the Termite Investigations Committee says: "Of the houses damaged by earthquake, many were found to be infested by termites. It is obviously difficult to assess quantitatively the relative contributions to earthquake damage by structural weaknesses, on the one hand, and by termite damage of such members, on the other hand. It is apparent, however, that termite damage adds to the earthquake hazard, especially in the case of that by the subterranean termite, whose main area of operations is in timbers near the ground.

"The impartial and searching earthquake test establishes the fact that wood is eminently adapted for meeting the earthquake hazard in houses and other residential structures, and that the prevention of termite infestation is essential in maintaining the protection afforded by the use of wood."

The added cost of providing adequate protection against the ravages of termites and destruction by fungi, as well as greater security in case of earthquake, is a nominal sum ranging conservatively from 1½ to 3 per cent of the cost of the structure, being higher for single story houses and proportionately lower for buildings of two or more stories, depending upon the ratio of floor area above the first floor to the area to be protected.

Air-Conditioning

by Wm. E. Leland, M. E.

DURING the last few years we have heard a lot about air conditioning and now it is a real factor in the engineer's scheme of things.

Formerly the mechanical engineer had to deal with ventilation as his main problem, and so long as he could design a good ventilating system that would supply a reasonable amount of fresh air he felt that he had done about all that was expected of him in this line.

If one were to define the word "ventilation" he would probably state that it was "supplying to the building sufficient fresh air to maintain a reasonable degree of air purity in the rooms and to remove all used or foul air, combined with the proper heating of the spaces in cold weather."

On the other hand, air conditioning comprises considerably more than just ordinary ventilation as above described and may be defined as the maintenance of healthful and comfortable living conditions in our buildings by the maintenance of proper temperatures, proper humidities, proper air motion in the rooms and proper cleaning of the air handled in the ventilating or conditioning apparatus.

In considering all of these qualities of air we ought to know how the variations of the different qualities affect the total result of the comfort of the occupants of a room; and how the three functions, temperature, humidity and air motion, must be combined to make up a comfortable condition.

Comfort, as the term is used in air conditioning, is that condition of the three functions above mentioned under which at least 95 per cent of the occupants of a room will express perfect comfort and be unconscious of any air conditions, either good or bad. In this condition it is possible to vary any one of these factors if the others are properly changed so that no change in comfort will be noticed. For instance, an actual temperature of 70 degrees and a relative humidity of about 50 per cent with still air, produces comfort. Now if the temperature is raised to, say, 72 degrees, the relative humidity lowered to about 30 per cent and the air motion maintained at a condition of still air no change in comfort conditions will result, while if the air motion is increased the comfort point will drop and the general impression will be that the room is cooler than formerly although the actual temperature as measured by a thermometer has increased.

In like manner, a lowering of the actual temperature can be offset by raising the humidity and any increase of air movement in the room will produce a lower comfort point and an apparent change in temperature.

As far as ventilation is concerned, a very small amount of fresh outdoor air is required for good results, and as little as ten cubic feet per minute per person is amply sufficient if the air is properly conditioned, and upwards of 75 per cent of the total air handled by the ventilating or conditioning plant may be recirculated. This fact results in considerable operating economy in the saving of fuel in cold weather when all the fresh outdoor air has to be heated up to approximately 70 degrees before it can be admitted to the rooms, and, likewise, if the

The author is a member of the firm of Leland & Haley, Consulting Engineers, San Francisco.

problem is one of cooling in hot weather less cooling effect is required if most of the air at the cooler room temperature is recirculated instead of using 100 per cent of the hot outside air. In cooling from high outside temperatures, air motion is very important and much benefit will result from the circulation of a large amount of air even if the actual temperature is high. As a matter of fact the comfort point in summer is at a considerably higher temperature than in winter.

With every air-conditioning system adequate means of cleaning the air of all dirt and foreign matter should be installed and this may be accomplished by means of dry type air filters or by means of air washers, especially if cooling equipment is to be installed.

It is probably well known that air washers can be used under certain conditions as effective cooling equipment. It should be remembered that this type of cooling is always accompanied by an increase in humidity and oftentimes the air washer cooler will produce a condition that is worse, as far as the comfort point is concerned, than if no cooling had been attempted and the air motion decidedly increased instead. In no sense is a simple air washer to be considered as an air conditioning equipment as there is no control of relative humidity produced in the rooms.

Air-conditioning plants are valuable for two specific uses, first, in occupied portions of buildings where it is desired to produce constant conditions of comfort regardless of outside weather conditions, and, second, in industrial plants where certain fixed conditions of temperature and humidity are required for the satisfactory manufacture of the particular product. In such cases it is perfectly possible to produce any condition of temperature and humidity desired and to maintain these conditions indefinitely and automatically. In every such installation apparatus for producing heat, refrigeration and air handling must form a part of the installed equipment.

Unit apparatus is built for supplying air conditioning in small rooms or buildings, including residences, and particularly where atmospheric conditions require cooling for a large part of the time. The cooling is generally accomplished by artificial refrigeration, but if cold water at temperatures below about 65 degrees can be obtained in sufficient quantities this can be used as the cooling medium.

In some cases cooling water can be produced in sufficient quantities by the use of an atmosphere cooling tower, and the water recirculated as in the case of the conditioned air.

In order to cool air without adding humidity to it the air must be cooled by surface contact with some form of radiation in which the water is circulated and the air cooled the same way it is heated when steam or hot water is used for heating.

With the air washer method of cooling, the air is cooled by actual contact with a fine water spray when water is evaporated by the passing air, the heat for this evaporation being taken from the air itself, and the evaporated water added to the air in the form of added relative humidity. In such an equipment the cooled air leaves the air washer at saturation of somewhat below that condition, depending on the efficiency of the washer. As it enters the rooms to be cooled it takes up heat and its relative humidity is correspondingly reduced, but with the final result that in almost every case the humidity in the room is raised above the proper point for comfort. In this type of equipment the degree of cooling depends entirely on the temperature and relative humidity of the outside air, and no air can be recirculated as recirculation would result in increase of the relative humidity in the rooms to the saturation point.

Steel-Frame

by Philip I. Baker, C. E.

WALL FRAME ERECTED READY TO RECEIVE FLOOR JOISTS

Architects and engineers throughout the Pacific Coast are manifesting unusual interest in the new Girls' Dormitory buildings under construction at Stanford University Campus, Palo Alto. The structures are so unusual in design that engineers predict they are forerunners of a popular type of light steel construction for apartment houses and residences.

Speed in fabrication and erection, as well as economy and strength, were factors influencing the University authorities in their final approval of the design. The group is made up of four buildings, each two stories with high concrete basement, and covering ground area 50x200. The site is in the San Andreas fault, hence the need of a type of building possessing sufficient flexibility to withstand severe earth stresses and at the same time comply with the rigid requirements of the new State earthquake law. Below is a detailed description of the buildings by Mr. Baker, author of the steel design.

AT Stanford University there is now under construction a large dormitory project, based upon the principles of fire safety, earthquake resistance and permanence.

Four connected, yet distinct units, each opening on the large court yard, will house a total of two hundred women students.

The group of new structures, known as Lagunita Court, forms a new dormitory unit accommodating two hundred girl students, increasing the total housing facilities for women at Stanford to one thousand.

With the architectural monotony eliminated through the use of broken lines, outside staircases, porches, terraces and arcades, Lagunita Court will have no resemblance to the old type of dormitory. However, it will be similar to Toyon Hall and the Women's Gymnasium. The new dormitory is located on Santa Teresa, facing the Women's Gymnasium, and occupies the space between Roble Hall and Governor's Lane.

These dormitories are two stories high and 42'6" wide. Two of the buildings are 156 feet long and two are 209 feet long. The front of the building, also opening on the court, and joined to the dormitory units by corridors, will contain the central lobby, offices and package rooms. Extending over half the length of the court on either side are the two front dormitory units. Connected to them by corridors are the two end units. These are arranged in echelon, continuing on to the south side of the court, where they open into the two dining rooms. A large kitchen, flanked on either side by servants' quarters, is located at the rear of the court, adjoining the dining rooms.

In this type of building there are many requirements to be fulfilled, such as fire safety, earthquake resistance, elimination of shrinkage, freedom from termite attack, adequate space for installation of plumb-

WALL PANELS BEING FABRICATED IN SHOP

LAGUNITA COURT

Stanford University

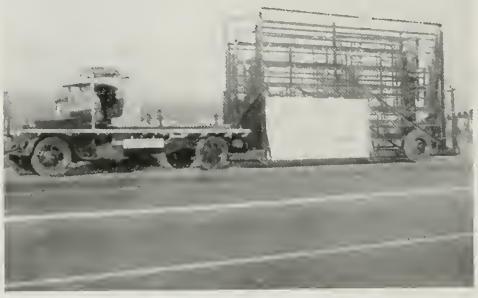
A dormitory for 200 women students.

The first arc welded steel frame for this type of building on the Pacific Coast.

Fire insurance rate is 27 per cent lower than for wood frame.

Designed to resist severe earth stresses, being located in the San Andreas fault.

Nature of structural design eliminates all termite hazards.



WALL PANELS BEING TRANSPORTED IN SPECIAL TRUCKS DOWN BAYSHORE HIGHWAY

ing and wiring, and the time required for construction. After investigation for a suitable material to meet all of these requirements, it was decided to use a light steel frame for wall studs and floor joists. Although the architectural elevations and a great many of the details had already been determined, the adoption of the steel frame construction did not in any way change the architectural features.

First Floor Construction

The first floor construction consists of steel truss joists spaced thirty-two inches apart, supporting two by four sleepers at seventeen inches on center, placed at right angles to the joists. These sleepers are secured to the joists by means of special steel clips. The sub-floor is nailed directly to the sleepers, and then the hardwood finish floor is placed over the sub-floor.

The second floor is supported on steel truss joists at thirty-two inches on center. The ceiling of the first story is attached directly to the bottom chord of the joists, and is composed of three-quarter inch hot-rolled channels at twelve inches on center, to which is attached one layer of one inch insulation.. One layer of "chicken wire" was fastened to the insulation and then the ceiling plaster was applied. Two by four sleepers at seventeen inches on center are securely fastened on top of the steel joists. On top of the sleepers is applied the one-inch sub-floor, one-half inch Celotex, and the hardwood finished floor.

The ceiling of the second story is composed of truss steel joists supporting three-quarter inch channel, Bar-X metal lath and plaster.

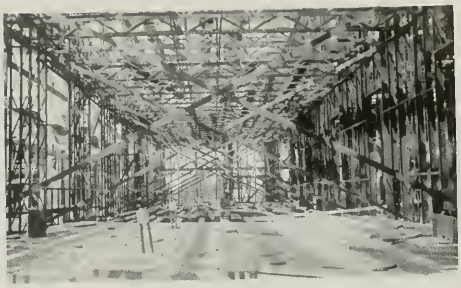
The roof consists of red tile supported by one inch wood sheathing and two by four rafters, spaced twenty-one inches on center, these rafters in turn being supported by a steel frame resting on the corridor walls and the ceiling joists above the second story.

Arc-Welded Steel Joists

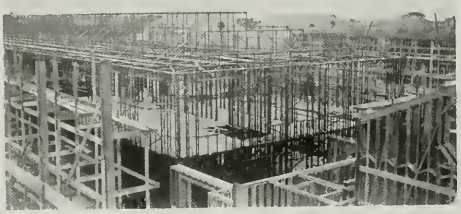
The floor joists are all arc-welded steel joists of determinate truss design. All panel points have sufficient weld to fully develop the stresses in the members connected. The main joists are all twelve inches deep and forty - two feet six inches long, extending from out to out of the building, and are welded to the interior bearing walls as well as the exterior walls. This provides a system of wall and floor framing all definitely and rigidly connected together. The bottom chord extends throughout the length of the joist from wall to wall, parallel to the top chord. This provides a definite, even and rigid support for the ceilings. The Soule steel truss joists are said to be the only joists which have this feature, as other joists bend up the bottom chord at the support and add an extension in order to carry the ceiling. By extending the bottom chord through to the support, the possibility of cracks developing at the junction of the ceiling and the wall is eliminated.

The exterior frames are all arc-welded trussed studs made up in panels of sizes convenient to handle in the field, and with openings provided for windows and doors and recesses under the windows for radiators. All shop and field connections, including attachment of bracing, are arc-welded. The panels are two stories high, extending from the foundation to the eaves, six inches thick and approximately ten feet six inches wide. The wall studs are placed sixteen inches on center.

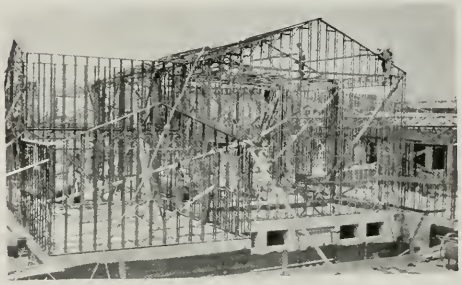
The interior frames are also arc-welded. These frames are made up in panels two stories high, four inches thick and approximately ten feet six inches wide. The main stud at the line of the cross partitions are made of four-inch arc-welded trussed studs similar to those in the exterior walls. Between these trussed studs are placed four-inch cold-rolled channels studs at sixteen inches on center. The studs at the line of



EARTHQUAKE BRACING IN ALL NON-BEARING TRANSVERSE PARTITIONS



STEEL FRAME COMPLETED READY FOR ROOFING AND LATHING



WALL FRAMING IN PLACE FOR KITCHEN

EXTERIOR OF MAIN BUILDING READY FOR PLASTERING

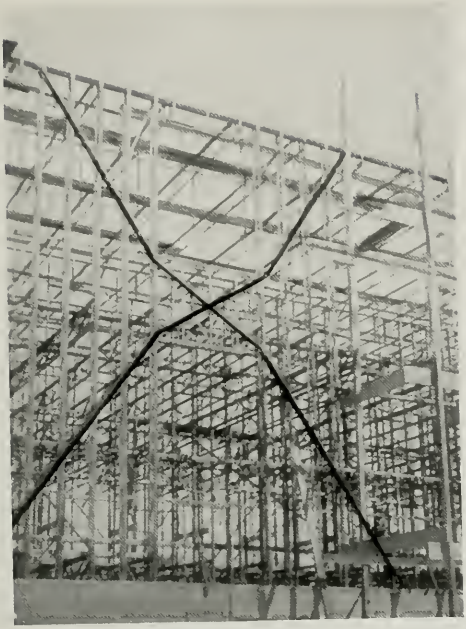
cross partitions are made heavier, as they are to provide additional strength to absorb earthquake stresses. All openings are framed with the four-inch channel stud material. To these frames are attached the bucks for framing the doors. The bottom plates of the wall frames have slotted holes accurately spaced to slip over the bolts which are placed in the concrete foundation.

VIEW DOWN CORRIDOR, READY FOR LATHING AND FLOORING

Special Trailers for Transportation

The frames were transported to the job on special trailers. Transportation of these frames presented a rather difficult problem. In order to obtain efficient erection, it was necessary that the panels be made up in sections as wide as could be handled conveniently on the job. On account of the state laws, it was not possible to obtain a permit for hauling material more than eight feet six inches wide horizontally. It was therefore necessary to devise a trailer that would permit the transportation of units as large as 22 feet long and twelve feet high. This was done, and no difficulty has been experienced in the transportation.

Over the outside of the steel frame is placed water - proof paper - back Steeltex, upon which the stucco is directly applied. This permits extreme flexibility in architectural treatment. On all interior walls the plaster is applied directly on Bar-X lath, which is secured to the steel studs. For ceilings, Bar - X lath is attached to the underside of the steel truss joists and forms a rigid support for the plaster.



EARTHQUAKE BRACING ON LOAD BEARING WALLS

To provide for earthquake resistance, special cross-framing is arc-welded to all interior and exterior load-bearing wall studs. Additional cross bracing is placed in both stories at all transverse room partition walls. This bracing is arc-welded to the wall studs at longitudinal partition lines. All steel truss joists extend clear through the building transversely between outside walls, and are arc-welded to the wall studs at exterior and interior walls. There are four main lines of steel framing extending the entire length of the building, these lines consisting of the exterior and corridor walls. The entire wall structure is resilient and sturdy. It is completely welded together to develop members to the full strength of the material. Earthquake and wind stresses are dissipated with momentary yielding, after which the members will return to their static position.

A simple group of units, each one of which is free to swing with its own period of vibration without damage to others, is essential. Lagunita Court, with its unusual arrangement of offset units, may be easily cited as the architect's answer to Dr. Bailey Willis' radio challenge "Americans can be safe in earthquakes, and it is up to Californians to show them how."

Time Saving an Element

During the time the various steel units were being detailed and fabricated, the general contractor was preparing the foundations. By having the wall frames ready to erect as soon as the concrete foundations were ready, considerable time was saved

END WALLS COMPLETED AND READY FOR ROOF JOISTS

in the field. All welded connections are arc-welded, and each panel is welded to its adjoining panels.

Time was a very important element in this work. The building schedule called for erection and completion of all steel frame work, beginning May 1 and ending June 16. Even though it was anticipated that this would be a very severe and rapid time schedule, the general contractor was able to commence laying his sub-flooring in the fourth dormitory on May 29, just eighteen days sooner than originally contemplated.

The dormitories were designed for a live load of forty pounds per square foot in the rooms and one hundred pounds per square foot in the corridors, plus the dead load. In addition to these loads, provision was made to resist earthquake stresses by designing for ten percent gravity. The state law provides that buildings of this type "shall be designed and constructed to resist and withstand horizontal forces from any direction of not less than two percent of the total vertical design load or twenty per cent per square foot wind pressure on the vertical projection of the exposed surface, the horizontal force used to be the one that produces the greater stress in the building." However, in this case a twenty pound wind pressure amounts to practically seven percent gravity. These buildings, therefore have greater earthquake resistance than that required by the state law.

Before being allowed to work in either the shop or the field, each welder was required to make test welds which would show a minimum ultimate strength of sixty thousand pounds per square inch. This sixty thousand pounds per square inch amounts to approximately six thousand pounds per lineal inch of one-eighth inch weld. Since the unit working stress adopted for welds was 11,300 pounds per square inch, the unit working stress per lineal inch of one-eighth inch weld is one thousand pounds. From this, it is readily seen that a large factor of safety was obtained.

Advantages of the New Type

In this type of construction there are many advantages to be obtained, such as the following:

(1) The fire hazard is minimized, and thereby a much cheaper fire insurance rate is obtained than is possible with a wood frame or even a wood frame with sprinkler system. The fire insurance rate obtained on this steel frame building is twenty-seven percent lower than that for wood frame buildings, and nineteen percent lower than that for wood frame buildings with sprinkler system.

(2) This type of construction is admirably adaptable to earthquake resistance design, and is designed to resist definite forces. All stresses can be accurately determined where the steel frame is used, whereas in some other types of construction it is very difficult to accurately determine what will take place when depending entirely upon questionable connections. This building will have a certain amount of flexibility, thereby preventing sudden ruptures due to violent earthquake stresses.

(3) Termites, which are becoming an increasing hazard to wood structures throughout California and other Western states, cannot attack the members of the steel frame. Thus, the termite hazard is entirely eliminated from the structural portions of the building, as there is no possible chance for these insects to enter the studs or joists.

(4) Shrinkage, which is one of the worst problems to the architect, builder and owner, is entirely eliminated from the steel frame construction. There will be absolutely no trouble from shrinkage in the steel frame.

(5) Adequate space is provided for conduits and plumbing through the joists or through the open web stud system. This reduces the cost of wiring and plumbing, and also provides a possibility of making quick and economical changes in the wiring and plumbing systems at future dates.

(6) The time of erection is greatly reduced, due to the fact that the walls are made up in panels in the shop and are ready to be erected immediately upon arriving at the job. This greatly reduces the job overhead.

The architectural plans were prepared by John Bakewell and Arthur Brown Jr., associated architects. The University is building the dormitories, with George Wagner of San Francisco as manager of construction. All structural details were checked by Professors J. B. Wells and A. S. Niles of the Stanford University Engineering Department. The fabrication and erection of the steel frame was done by the Soule' Steel Company. The structural design was prepared by the writer.

ARCHITECTURAL EDUCATION

[Concluded from Page 34]

means work out the general scheme of a little structure and then model it. The modeling is first done in plasticine, so that it can be studied with a flexible medium, and when a solution has been found, a fine model is made in more permanent materials using color. When the problem is complete, rough plans and elevations are made; and as would be expected, they are very intelligent. In this connection we are also studying ornament from the standpoint of the general principles of design without copying anything. These are also modeled before they are drawn, if they are drawn at all. What we are trying to give to these students from the start is that study of architecture is not a matter of purely paper problems, but rather that it is the designing of buildings, starting with the simplest examples we can find.

Encourage Students Inspiration

A study of historic details is given later in connection with the the history courses when the student may better understand the reason for this part of his education. It is merely our ambition to see if it is not possible to train students with a little more natural emphasis upon the fundamentals of design rather than upon architecture as merely the reassembling of motifs and alphabets of the past. These we hope they may come to use naturally as inspiration instead of being trained from the first only to copy and fit old motifs to new solutions. We wish it to be understood that this is entirely in the nature of an experiment. There has not yet been sufficient time to observe whether we are making any contribution to architectural education."

"We are attempting at this College to collaborate intimately the allied arts with architecture. They are given in the same building with the studios closely combined. Every opportunity is given the architect to contact and experiment with the other arts and vice versa. We are trying to be, in fact, just one family in the general field of the fine arts."

"Incidentally, some of the best painters and sculptors, etc., are proving to be students who have started in architecture and then have found their great interest in one of the allied arts. Our fine arts divisions are purely professional and lead to the degree of Bachelor of Fine Arts."

"We have dropped all language requirements."

[The second part of Mr. Lawrence's paper will be published in the August number.]

CLOSE UP OF MARIN TOWER, GOLDEN GATE BRIDGE
NOTE FLAG PLANTED ON TOP.

Records

by J. F. Branagan

TO the professional man his records constitute the commodity or stock in trade with which his business is conducted. The architect or engineer above any other should take the greatest care and afford the highest means of protection to those records which make up the very vitals of his professional work. By the same token it is the architect and engineer whose duties and responsibilities require that he advise and safeguard others in this regard, through his plans and specifications.—who should be most meticulous and exacting in the protection of his own essential records.

Yet how frequently are we careless of our own affairs in proportion as we are mindful of others! It is no meaningless adage that the shoemaker's children are often the most poorly shod.

Some years ago the engineer's office on a sugar plantation in the Philippines burned to the ground. Every effort was made to save the surveying instruments and it was not until after the building had collapsed in a pile of ashes that the full portent of this deplorable error was realized. The burned drawings, tracings, maps and survey records could not be replaced for a thousand times the value of the transits and levels that were saved. Many of them could never be duplicated, and their loss was a handicap that hindered operations and retarded progress for years thereafter.

The National Fire Protection Association, in their 1932 report, makes this statement, which shows the comparative value of physical property and paper records: "Some elements of the value of records can be determined quite readily, for others the best approximation, that sound judgment can furnish, must be used. Such inventories, properly and carefully prepared, may produce results that those hitherto unfamiliar with the subject may find almost incredible. In one Federal government department, such a study showed the following:

"Approximate present value of buildings, $25,000,000.

"Inventory value of contents, $11,000,000.

"Records and uninventoried values, $190,000,000.

Photo courtesy Remington, Rand, Inc.

RECORDS INTACT AFTER A DESTRUCTIVE FIRE

"Surely such grave possibilities of loss should not be disclosed only by bitter experience, but they should be wisely foreseen, intelligently appraised and vigorously guarded against."

Even the most thoughtful business man or professional man today is inclined to place a disproportionate value upon physical property and minimize the worth of paper records. We recognize the value of a check, a draft or paper currency, but overlook the fact that a notebook, a memorandum or a letter may be infinitely more deserving of protection in that its loss would be irreparable.

In the evaluation of records three factors must be taken into consideration in addition to their actual, intrinsic value. Besides this, each record has a Replacement value, a Consequential value and a Contingent value. The meaning of the first is obvious and consists of the actual labor and material cost of surveys and similar work in gathering the essential data from external sources for their reproduction. The Consequential value refers to the losses which will be sustained through their absence, from lack of facilities for economical operation without them. The Contingent values are less tangible but often more vitally important to certain classes of records. This factor is exemplified by such contingencies as legal complications which may arise through the absence of the records which have been destroyed. These may constitute an extremely heavy monetary loss.

In a recent survey conducted by R. G. Dunn, in cooperation with a prominent manufacturer of vaults and safe-cabinets, of one hundred fires in commercial establishments throughout the United States, these astonishing facts were revealed as losses sustained through the destruction of records:

43% did not resume business.

17% were unable to furnish financial statements thereafter.

14% suffered from 30% to 66% in credit rating.

26% retained the same credit rating but lost in other ways.

All of these were commercial institutions the destruction of whose records constituted but a portion of the total loss.

Besides the usual books of account required in any business, such as cash book, journal, ledgers, bank books and cancelled checks the architect has many other vitally important records. There is his library with his engineering and reference data, his contracts, his working papers or memoranda, his drawings, tracings and blue prints. Also there are his cash vouchers, or certificates, given to contractors passing work done and approving payment by the owner. His correspondence is unusually valuable to the architect containing, as it does, instructions from and agreements with clients; their instructions, changes, follow-ups, etc., with contractors and with manufacturers regarding specifications and quotations. The destruction of such records would constitute a far more serious loss to him than would that of his regular books of account.

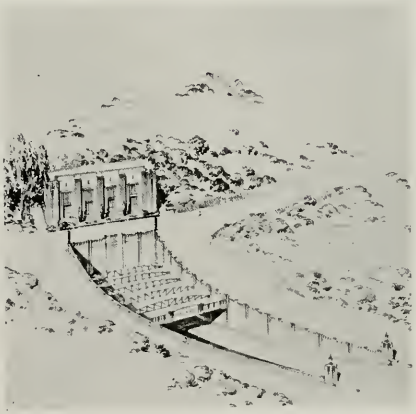
It is axiomatic that the largest per capita fire losses occur in the more densely populated centers and equally obvious that it is in such centers that the architect is most in demand. No one knows better than he that no building, with its interior trim and furnishings is fire proof; at best it is slow burning or fire resistant. Valuable records should have independent protection apart from the building in which they are housed. The exhaustive research of manufacturers of vaults, files and safe-cabinets has resulted in the manufacture of equipment today which will withstand long exposure to high temperature and the shock of an appreciable fall thereafter without damage to their contents.

Tunnel

by Wallace B. Boggs, C. E.

THE Broadway low-level tunnel project of Joint Highway District No. 13 is planned to provide a modern highway route from Oakland, Berkeley and other East Bay cities into the Contra Costa county suburban area east of the Berkeley hills. Ultimately it will be a part of an Oakland-Stockton highway, which will result in a saving of about 10 miles in distance as compared with the present route through Dublin Canyon, Livermore and Tracy.

The project had its inception in 1926, when public demand, aroused by the inadequacy of the existing Tunnel Road and Fish Ranch Road routes, resulted in the preparation of a preliminary report on possible tunnel locations through the Berkeley hills, between Alameda county and Contra Costa county. This report was prepared upon the authorization of the counties of Alameda and Contra Costa, and the city of Oakland, acting jointly.

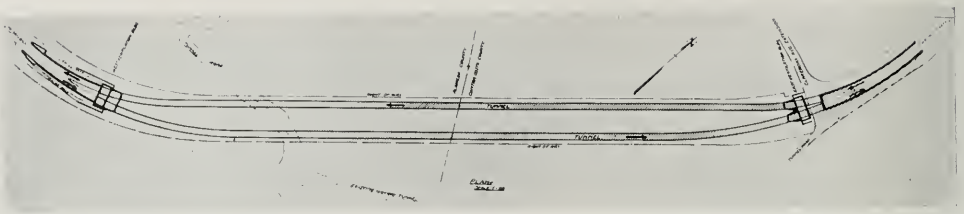


LIGHT TRANSITION STRUCTURES AT EACH PORTAL WILL AID DRIVERS' VISION

Following the submission of the report, a joint highway district, consisting of Alameda and Contra Costa counties, was formed to perform the preliminary work, including a survey for a relocation of the highway between Oakland and Walnut Creek.

State Cooperated

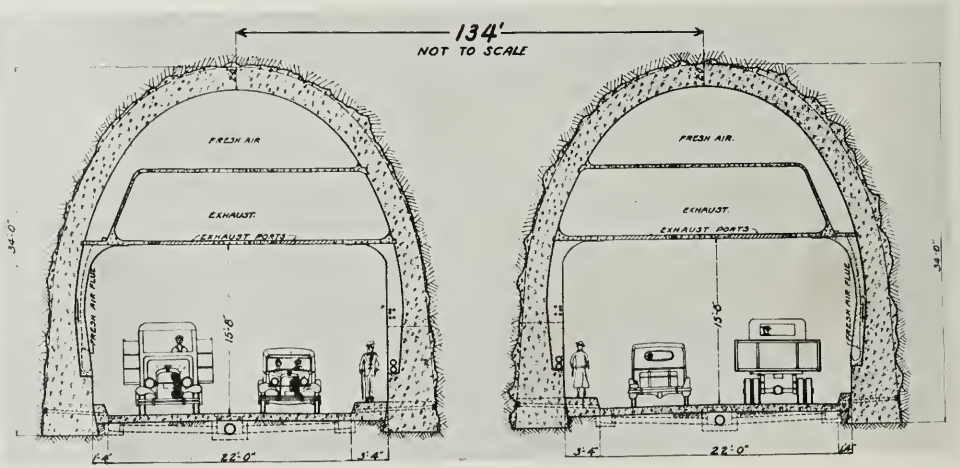
The California Highway Commission, at about the same time, made a preliminary reconnaissance of the proposed Oakland-Stockton route, and the report by the State highway engineers emphasized the importance of this road in providing an adequate and direct easterly outlet from the East Bay cities, and in opening up the suburban areas in Contra Costa County to further development.



The tunnel will consist of two parallel bores, each having a 22-foot roadway and 3-foot sidewalk. The bores will be 15 feet apart at the portals but separated by 100 feet through the main portions with cross connections for pedestrian use and ventilation provided by huge fans installed in concrete buildings at each portal.

Action of the State Legislature resulted in the taking into the State highway system of the existing Tunnel Road in Contra Costa County. An agreement for financial aid by the State in the construction of a new tunnel and highway approaches to be built by Joint Highway District No. 13, consisting of Alameda and Contra Costa counties, came as a result of cooperation between the Director of Public Works of the State of California, the California Highway Commission and the officers of Joint Highway District No. 13.

Traffic studies made by the Division of Highways showed a weekly traffic over the present narrow and hazardous route



The main part of the project is 2.82 miles in length, consisting of a highway leading from the intersection of Broadway and Keith Avenue in Oakland, up Temescal Canyon and into the Berkeley Hills, in a double bore tunnel 3168 feet long emerging north of the Fish Ranch Road in Contra Costa County the highway extending to a connection with the present Tunnel Road about 1500 feet north of the Fish Ranch Road. The tunnel will provide four traffic lanes, each bore accommodating two one-way lanes on a 22-foot roadway. Eventually this project will be a part of the Oakland-Stockton highway providing direct access to the San Francisco-Oakland Bay Bridge for that section east of the Berkeley Hills extending into the San Joaquin and Sacramento valleys.

of 30,000 vehicles in 1930, and indicated a probable traffic of 77,000 vehicles weekly in 1940. The completion of the San Francisco-Oakland Bay Bridge in 1937 will probably cause this estimate for 1940 to be considerably exceeded by affording a short cut from the Stockton area.

Standard Four-Lane Highway

The determination of standards for the new route was made after cooperative studies by engineers of the joint highway district and the engineering staff of the State Division of Highways. Fundamentally, these standards provide for a four-lane highway, with adequate shoulder areas, a maximum gradient of 5.1 per cent, and a minimum radius of curvature of 800 feet; the elimination of grade crossings with railroads and other main highways was also determined upon. California highway design standards for structures were made a minimum requirement.

Location surveys were made by the district and the detailed design of structures carried on during 1932. All rights of way were acquired by the district during that time. Plans and specifications for the project were completed in March, 1933, and received the approval of the Director of Public Works.

The main part of the project is 2.82 miles in length, consisting of a highway leading from the intersection of Broadway and Keith Avenue, in Oakland, northeasterly up Temescal canyon and through a double bore tunnel 3168 feet in length on the center line, emerging north of the Fish Ranch Road in Contra Costa county, the highway extending to a connection with the present Tunnel Road about 1500 feet north of the Fish Ranch Road; there is also an additional unit of 0.91 mile of highway connecting the new road with the Tunnel Road leading to Berkeley, and with Landvale Road in Oakland.

Two Important Connections

This latter unit provides an East Oakland connection and also a new through route from Berkeley to East Oakland and to Southern Alameda county, which will eliminate the necessity of using heavy traffic streets and will effect a saving of about a mile between points in East Oakland and the University of California campus and business sections of Berkeley.

This East Oakland - Berkeley highway crosses the main Tunnel highway on an overhead structure. The Fish Ranch Road is also carried on an overhead structure over the east portal of the tunnels to connect with the existing Tunnel Road.

The tunnel will consist of two parallel bores, each having a 22-foot roadway and a 3-foot sidewalk. The tunnels are 15 feet apart at the portals, but are separated by 100 feet through the main portions. Three cross - connections for pedestrian use are provided between the two bores. The tunnels will be concrete lined throughout, and mechanically ventilated to keep carbon monoxide pollution within safe limits.

The fans, which are installed in reinforced concrete buildings at each portal, have an input capacity of 1,500,000 cubic feet of fresh air per minute, and will exhaust a similar amount of air, when operated at maximum speeds. Carbon monoxide recorders and detectors will indicate the degree of pollution at all times and serve as a guide to the operation of the fans. Electric illumination and traffic control devices are provided.

A feature of the construction will be the light transition structures at each portal. Experience at other highway tunnels has shown that the eye does not adjust itself to the difference between the intensity of sunlight and the maximum practical artificial illumination in a tunnel with sufficient rapidity to insure good vision when vehicles are traveling at high speed.

1—New tunnel road. 2—West portal of new tunnel. 3—East portal. 4—Old tunnel road. 9—Broadway, Oakland. 10—Fortieth Street, Oakland.

Broadway Low Level Tunnel Project Be

There has therefore been provided a transition section about 200 feet in length, which consists of an overhead louvre device supported upon the portal approach walls. These overhead louvres prevent direct rays of sunlight from falling upon the roadway area and thus provide a lighting of intermediate intensity as compared with the direct sunlight outside and the artificial illumination inside the tunnel.

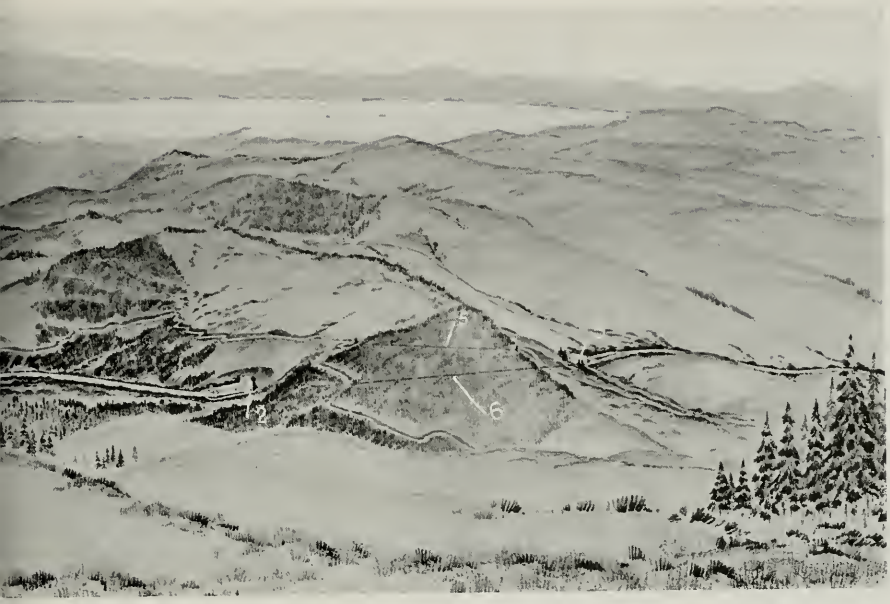
Materials Used in Construction

The project involves the use of approximately 120,000 barrels of cement, 2500 tons of reinforcing steel, 1000 tons of structural steel shapes, the construction of about 700,000 square feet of 8-inch oiled macadam pavement, and the handling of over 1,000,000 cubic yards of material in grading and excavation. It is estimated that an average of approximately 900 men will be employed on the project over a period of from 18 months to two years.

The estimated cost of construction is $3,752,000. A Federal PWA grant has been obtained by the joint highway district in the amount of $1,095,000. The balance of funds will be obtained through the sale of the district's bonds and the contributions of the State to the joint highway district.

The State has allocated $300,000 from its Joint Highway District fund and a further contribution of $400,000 over a period of years is to be made by the State towards the project bringing the State aid to a total of $700,000.

The completed project will provide a new, modern highway route into Contra



5—Line of old tunnel. 6—Line of new tunnel. 7—City of Berkeley. 8—Lake Temescal. 11—San Francisco-Oakland Bay Bridge. 12—Golden Gate Bridge.

...en Alameda and Contra Costa Counties

Costa county from Oakland and the East Bay cities. A distance saving of approximately two miles will be effected from the point where the new road diverges from Broadway, in Oakland, to where it joins the existing Tunnel Road in Contra Costa county.

Curvature on the new highway will be less than 600 degrees as compared with about 5000 degrees on the present Tunnel Road; the minimum radius of curvature is 800 feet, as against many curves with about 50-foot radius on the old road. Grades are 5.1 per cent maximum on the main highway approach and 4 per cent through the tunnels.

The present tunnel on the old road has only 17 feet clearance between the side walls and the highway approaches are on approximately a 6 per cent grade, and have from 20 to 25 feet of paved width with practically no shoulder areas. The new highway will have 40 feet of paved surface and minimum shoulder width of 10 feet on each side.

Avoids Local Fog

The Fish Ranch Road, used as an alternate route, has grades up to 16 per cent, is narrow, crooked, and crosses at a summit about 500 feet higher than the new road; it is also subject to a great deal of local fog at the upper elevations.

The new route will connect directly with the business center of Oakland.

Editor's Note—This article and accompanying illustrations are published by courtesy of the California State Department of Highways and Public Works.

ARCHITECTURE A BUSINESS

By Harvey Wiley Corbett, F.A.I.A.

in The American Architect

I HAVE frequently asked myself this question in the past few months: Has the architectural profession as a whole become truly modern? And what do we mean when we say "modern"? Is that merely the definition of some new forms of ornament and architectural dressing, some new uses of old materials, or fresh uses of new materials? Or have we as a professional group become modern in the sense of fitting ourselves—measuring up to the requirements of modern business, modern living, modern industrialism? Are we still the dilettante "dress-makers" of the Renaissance serving only the potentates and wealthy few? Or are we to be the dominant factor in the development of the modern building world, directing, controlling and advising in a measure all forms of building construction?

We shall not have "modernism" worthy of the name unless some fundamental changes in the affairs of life have occurred. I believe the last fifty years have seen social, economic and structural changes, greater than the whole history of previous time has witnessed. Socially the wealthy and powerful *few* have become the well-to-do *many*. Economically, every type and form of building demand treatment by architects because of their more comprehensive sense of arrangement. Structurally, new materials of all sorts and kinds, factory-made and machine-assembled, have come into wide use in the building world.

* * *

Architecture used to be an art, a one-man job so to speak, and was carried on for a limited and select group. In ancient days it was confined to enshrining the deities. In Roman times, the state as well as the deities required a proper architectural setting. In the middle ages, religion claimed the major abilities of the architectural designer. In the Renaissance, princes and great families needed an architectural background. But today, business, commerce, industrialism are the major forces in life with the state and education running a close second, and all of these are based on *rational* economics.

Architecture is no longer a one-man job. The complications of a modern building require the brains of many expert minds. Architecture has become a business as well as an art, and the architect as an individual, and the architectural profession as a group, must take cognizance of this fact.

No profession covers so broad a field nor takes so many years of preparation, study and apprenticeship. To render satisfactory service these days requires a very sizable organization built upon lines of expert knowledge and business efficiency. The public should know what such service means, but it can't know and never will know until the profession as a group organizes effectively and tells it so. Until that time comes, the intricate work of an architect will remain a closed book to most people.

We must take a page or two from the book of experience of our great industrial groups; bring our own members to a realization of their responsibility and then co-ordinate, synchronize and establish our group activities so that the nation as a whole may know the service we are capable of rendering.

That is the most important work before The American Institute of Architects today, and if it can be done we will no longer have the intermediate rows of unsightly fire-trap houses, the poorly planned and inefficient industrial plants, the ill-conceived, incommodious and disorderly city, the makeshift school and government building, but in their place will rise garden suburbs, pleasing and efficient industrial plants, cities of impressive beauty and real comfort, and state and educational groups of great dignity.

ARCHITECT'S FEE AWARDED

Claim of C. S. McNally, architect, for balance due for services in preparing plans for a residence for M. Hudaklin, was awarded by Judge Lazarus, in the Municipal Court, City and County of San Francisco, June 25.

First payment was made by the defendant upon delivery of plans, and the plans were signed by the defendant in acceptance, yet later repudiated and a counter-claim filed by the defendant, covering the amount of first payment. It was brought out in evidence that the plans recorded by Hudaklin had been traced from the plans prepared by Mr. McNally and they were identical with the exception of minor omissions; that the claim of McNally was based on a charge of two-fifths the normal architectural fee and therefore not excessive; that McNally had rendered ample service for the amount demanded and the judgment was in full for the small claim of $50 balance, the defendant being taken to task by the court for endeavoring to use professional services without compensation.

"It is time," said Judge Lazarus, vehemently, "that the professions shall receive every just consideration in connection with such actions as this."

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126..00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Duraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month. following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring—$12.00 to $15.00 per outlet for conduit work (including switches).
Knob and tube average $7.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass. 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 75c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)
Common, $36.00 per M.
Common O.P. select, $42.00 per M (average.)

1x4 No. 3—Form Lumber	$25.00 per M
1x4 No. 1 flooring VG	58.00 per M
1x4 No. 2 flooring VG	53.00 per M
1x4 No. 3 flooring VG	46.00 per M
1x6 No. 2 flooring VG	50.00 per M
1¼x4 and 6 No. 2 flooring	58.00 per M

Slash grain—

1x4 No. 2 flooring	$43.00 per M
1x4 No. 3 flooring	38.00 per M
No. 1 common run T. & G.	42.00 per M
Lath	5.60 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅞x3½ sq. edge Maple	140.00 M ft.		
	13-16x2¼" T&G	⅜x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	

Laying & Finishing 13c ft. 11 ft. 10 ft.
Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel. 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.60
2 coats, lime mortar hard finish, wood lath	.70
2 coats, hard wall plaster, wood lath	.80
3 coats, metal lath and plaster	1.25
Keene cement on metal lath	1.30
Ceilings with ¾ hot roll channels metal lath	.75
Ceilings with ¾ hot roll channels metal lath plastered	1.50
Shingle partition ¾ channel lath 1 side	.85
Single partition ¾ channel lath 2 sides 2 inches thick	2.75
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	3.00

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$1.10
2 coats Atlas cement, brick or concrete wall	1.35
3 coats cement finish No. 18 gauge wire mesh	1.50
3 coats Medusa finish No. 18 gauge wire mesh	2.00

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.50 ton; in paper sacks, $13.85 (rebate 10c sack).
Dealer's commission, $1.00 off above quotations.
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Plasterers Wage Scale ..... $1.25 per hour
Lathers Wage Scale ..... 1.25 per hour
Hod Carriers Wage Scale ..... 1.10 per hour

Composition Stucco—$1.60 to $2.00 sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat. with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasters and Hodcarriers (See wage scale under Plastering).	
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

« « « « With the Architects » » » »

MODESTO THEATER

S. Charles Lee, 2404 West Seventh Street, Los Angeles, is preparing plans for a reinforced concrete theater to be built on the north east corner of 13th & G Streets, Modesto, for the Redwood Theaters, Inc. The auditorium will seat 800 persons. The financial outlay will be approximately $100,000.

Architect Lee has recently been honored by the Royal Institute of British Architects, having been invited to exhibit plans and photographs of his recent work at the International Exhibition of Contemporary Architecture in London. Mr. Lee's design of the Fox-Florence Theater in Los Angeles is to be made a permanent exhibit in London.

SAN FRANCISCO WAREHOUSE

Dodge A. Riedy, architect, Pacific Building, San Francisco, has awarded a contract to Barrett & Hilp to build a one-story frame and concrete warehouse at Bryant & Langton Streets, San Francisco, for Edward J. Neil.

Mr. Riedy, associated with Charles E. J. Rogers, has completed preliminary sketches for a reinforced concrete school building to be known as the Lawton School at 30th Avenue, between Kirkham and Lawton Streets, San Francisco to cost $160,000.

HETCH HETCHY PROJECT

September is expected to witness the completion of the Hetch Hetchy project which will bring pure water from the snow fields of the Sierras into San Francisco by way of a 150 mile aqueduct connecting a great reservoir in Yosemite National Park with the Crystal Springs Reservoir in San Mateo County. Pictures of various units of the project will be published in the September Architect and Engineer, together with an interesting article by M. M. O'Shaughnessy, consulting engineer, and former city engineer of San Francisco.

BROADWAY TUNNEL

The Broadway Tunnel in Oakland is in course of construction and a subcontract has been awarded to the K. E. Parker Company of San Francisco for erection of the two entrance approach towers on the Oakland and Contra Costa sides. The contract amounts to about $250,000.

FRESNO AUDITORIUM

Public Works Administration, has appropriated $120,000 for the new municipal auditorium to be erected in Fresno and $115,000 for the Fresno County Hall of Records. Bond issues of $375,000 and $280,000, for the auditorium and hall of records respectively, were voted last December 19. An association of Fresno architects, including W. D. Coates, Jr., C. H. Franklin, H. Rafael Lake, E. J. Kump, Fred Swartz and E. W. Peterson, will prepare plans for the structures.

CIVIC AUDITORIUM

Public Works Administration has allocated $375,000 for the proposed municipal auditorium and seawall to be constructed on the ocean front in Santa Barbara. Approximately $93,750 of this amount would be an outright gift to the city, the balance to be loaned providing the voters approved a bond issue. Preliminary plans for the structure have been prepared by the Associated Architects of Santa Barbara, 116 E. Sola Street.

FEDERAL LAND BANK

Lindgren & Swinerton, Inc., have the contract and work is under way for remodeling the Breuner and Corder Buildings at 15th and Clay Streets, Oakland, for occupancy by the Federal Land Bank of Berkeley. The plans were prepared by James W. Plachek, architect of Berkeley.

SORORITY HOUSE ADDITIONS

John K. Branner, Shreve Building, San Francisco, is the architect of alterations planned to two sorority houses on the University Campus, Palo Alto. In both cases, the improvements will cost about $7500 each.

HOTEL MODERNIZATION

Bids have been taken for modernizing the Argonaut Hotel, owned by the Society of California Pioneers and located on Fourth Street, near Market, San Francisco. The cost of the work is estimated at close to $100,000. A. R. Denke is the architect. Efforts to secure a bank loan are in progress.

ADDITION TO STORAGE PLANT

An addition is being built to the storage building of the California Canneries at 18th and Minnesota Streets, San Francisco. Ellison & Russell, Pacific Building, San Francisco, are the structural engineers.

ARCHITECTS VIEW LANDSCAPE WORK

Landscape architecture as exemplified in the garden of R. C. Polk, 405 Borough Road, Tacoma, was viewed by the members of the Tacoma Society of Architects on Monday afternoon, June 4, following the regular weekly luncheon meeting.

Under the chairmanship of George Gove, the society is preparing an August program for celebration of the fiftieth anniversary of the building of the Tacoma Hotel. The Tacoma group will be host to the Washington State Chapter, A.I.A., at that event.

ARCHITECT-INVENTOR

C. B. Thompson, architect, Mutual Life Building, Seattle, is finding ready sale for the Thompson nozzle water elevator, his pump invention used by placer miners for drawing gold-bearing sand from the beds of streams. Recent sales were made to operators on the Sultan River, Snohomish County, and the Similkameen River, Okanogan County, both in Washington, and on the Rogue River in the Siskiyou country, Oregon.

SWEDISH ARCHITECTURE

Prof. Harlan Thomas, Department of Architecture, University of Washington, gave an exposition of Swedish architecture on Thursday, May 31, before the Active Club of Seattle. The lecture included a description of the notable monumental buildings in Stockholm, which he observed on his visit to the Scandinavian countries several years ago.

DR. BAILEY HONORED

Dr. Bailey Willis, internationally known expert on earthquakes and emeritus professor of geology at Stanford University, has been elected president of the Pacific division of the American Association for the Advancement of Science. He will replace Dr. Joel Hildebrand of the University of California.

The next meeting of the Pacific division will be held in Los Angeles in June, 1935.

STORE BUILDING

A one-story reinforced concrete store building will be built on Bush Street, between Mason and Taylor Streets, San Francisco, from plans by Martin Sheldon, Monadnock Building, San Francisco. Mr. Rice, the owner, has selected G. P. W. Jensen as contractor.

BERKELEY DWELLING

Professor C. N. Tompkins, of the University of California will build a $7000 dwelling on Alvarado Road, Berkeley, from plans by John Hudson Thomas, architect, 31 Norwood Street, Berkeley.

SCHOOL AUDITORIUM

The Federal government has allocated $300,000 for the proposed new Bakersfield high school auditorium. Approximately $90,000 of this amount will be in the form of a grant, the remainder to be a loan secured by a bond issue which will probably be submitted to the voters at the August primaries. Preliminary plans for a building to seat 3000 persons have been prepared by Architect Charles H. Biggar, Haberfelde Building, Bakersfield.

PERSONAL

E. C. Rising, architect, recently opened a downtown office at 436 Burke Building, Seattle. For the past several years he has handled his work from his home, 5033 17th Avenue Northeast.

Ralph C. Flewelling has moved his office from 9441 Wilshire Boulevard, Beverly Hills, to Suite 614 Architects' Building, Fifth and Figueroa Streets, Los Angeles.

Worswick, Mellin and Culver, 429 Court Street, San Bernardino, and 419 Valley Boulevard, El Monte, desire manufacturers' catalogues and literature, listing materials and specialties for commercial buildings, schools and residences.

Thomas B. Mulvin, 1105 N. Holliston Ave., Pasadena, has been granted a provisional certificate by the State Board of Architectural Examiners to practice architecture in California.

Lewis W. Hunt has established an office at 101 South Fuller Avenue, Los Angeles. He will have charge of repair and modernization work on properties obtained by the Metropolitan Life Insurance Company at foreclosure. Mr. Hunt will be pleased to receive manufacturer's catalogs and building material literature.

MODERN STORE DESIGNS

An architectural exhibit featuring new type of design for stores and cafes, by Charles F. Plumber, Walter C. Wurdeman and Welton D. Becket, was held the first two weeks of July in the Architects' Building Material Exhibit, Fifth and Figueroa Streets, Los Angeles. Photographs, sketches and colored renderings of hotels, residences, commercial buildings, stores, tea rooms and cafeterias were included in the display.

HOWARD H. WELLS

Howard Hawley Wells of Los Angeles was fatally injured June 24 in a collision on the highway near Balboa Beach with the trailer of a truck. He died later at Santa Ana Valley Hospital. Mr. Wells had an office and studio at 624 S. La Brea Avenue, Los Angeles.

THEATER CONTRACTS AWARDED

F. Frederic Amandes has recently awarded two theater contracts, one for the construction of a new steel frame and reinforced concrete playhouse at Pittsburg, Contra Costa County, at approximate cost of $50,000, and the other for extensive alterations to the Fox-Virginia Theater, Vallejo. The cost of the latter improvements will be $15,000.

SCHOOL ALTERATIONS

Bids will be received up to August 2d by the San Mateo High School District for alterations and structural changes to three school buildings. The estimated cost of the work is $130,000. James H. Mitchell is the architect and Harold Hammill, structural engineer.

BERKELEY SCHOOL WORK

The Berkeley Board of Education has applied for a $1,000,000 grant from the Federal Government to be used in connection with a pretentious school building program. If the grant is obtained a bond issue will be held, probably for another $2,000,000.

SUBURBAN SCHOOL WORK

William H. and Harold Weeks have completed plans for a one-story frame shower room addition to the Taft High School; also a one-room frame addition to the Morgan Hill Elementary school and a two-classroom addition to the Mariposa High School.

LOS ANGELES SCHOOL REMODELING

Extensive remodeling and structural changes will be made to the Figueroa Street school at 111th and Figueroa Streets, Los Angeles, from plans by Parker O. Wright, architect, and David H. Merrill, structural engineer, Los Angeles. The improvements will cost $65,000.

SAN RAFAEL RESIDENCE

Albert J. Evers, architect, 525 Market Street, San Francisco, has completed plans for a $20,000 residence to be built in San Rafael for J. D. Adams. The house will have twelve rooms, four baths and a double garage.

BERKELEY RESIDENCE

A contract has been awarded for a two-story, twelve-room residence to be built on Parnassus Avenue, Berkeley, for Mrs. A. W. Roth, from plans by Howard Burnett, architect, 931 Hillcroft Circle, Berkeley.

FILE SUB-CONTRACTORS NAMES

The Los Angeles board of education has adopted the same practice used by the San Francisco board of public works, that of requiring contractors bidding on city school projects to submit with their bids the names and bids of all subcontractors. This ruling applies to all work done for the board under contract by outside contractors, with the understanding that acceptance of general contractors' bids by the board shall be deemed to constitute the acceptance by the general contractor of the subcontract bids submitted. This requirement, first put into effect by the Public Works Administration to apply on projects financed in whole or in part by the government, was waived by that body on May 28, 1934.

MR. STODDARD'S WORK EXHIBITED

Two creations of George Wellington Stoddard, supervising architect for the Puget Mill Company, Seattle, were the subjects of public inspection during the past month. "The House of Adaptability" at Sheridan Beach, north end of Lake Washington, is a modern adaptation of the Early American style to qualify as a suburban home. "The Part-Time Farm Home" at Lake Serene on the Seattle-Everett Highway, is treated in the Cape Cod style and is dedicated to the First Lady of the Land, Mrs. Ann Eleanor Roosevelt in recognition of her interest in the subsistence homestead movement. Both houses are units in the Evergreen Empire development.

APARTMENT BUILDING ALTERATIONS

Revised plans have been prepared by R. H. Bickel, 9 Geary Street, San Francisco, for alterations to a three-story frame and stucco apartment building at Folsom and 12th Streets, San Francisco.

SAN JOSE AUDITORIUM

New bids are to be taken for San Jose's Civic Auditorium, bids previously received running high. Binder & Curtis, architects, have revised the plans and some of the more expensive mechanical equipment has been eliminated.

BOLINAS RESIDENCE

A one-story frame rustic dwelling will be built in Bolinas, Marin County, for W. H. Boyce. The architects are Dragon & Schmidts, 3016 Telegraph Avenue, Berkeley.

BOX DESIGN WINNER

The winner of the prize for the second design chosen in the Koh-I-Noor Pencil Company box design contest was Louis Edwards of 4047 Ida Street, Detroit, Mich.

Chapter and Club Meetings

CHAPTER HEARS DELEGATE'S REPORTS

Reports of delegates to the 66th annual convention of the American Institute of Architects provided an interesting hour for members of the Southern California Chapter at the June 12th meeting.

Sumner M. Spaulding, president of the Chapter, made a complete report covering the four-day program in Washington, D. C., where the convention was held.

A. M. Edelman, who attended the convention as a Chapter delegate and as a representative of the National Council of Registration Boards, gave a resume of the meetings held by the Council, which he termed the clearing house for the several state boards of architectural examiners. Mr. Edelman stated the principal business that came before the Council was the question of architects making application to practice in a state other than the one in which they are licensed.

A plan to simplify this procedure was adopted, whereby a student, after graduating from school and before taking his examination to practice, must have prerequisites which will include his having served a voluntary mentorship for a period of three years in order that he may have gained diversified experience. He then goes before the national board and, providing he passes the examination, is given a certificate entitling him to practice in any state in the country.

Myron Hunt, a member of the Institute's committee on public works, reported on the activities of that committee in which he gave entire credit for their accomplishments to Louis Le Baume, chairman.

Edwin Bergstrom, treasurer of the Institute, reporting on the financial condition of the organization, revealed that, for the first time in several years, an operating gain was recorded for the past year; this in the face of lowered income.

All Institute officers were re-elected for the coming year and include Ernest John Russell, St. Louis, president; Charles D. Maginnis, Boston, first vice-president; Horace W. Peaslee, Washington, D. C., second vice-president; Frank C. Baldwin, Washington, D. C., secretary, and Edwin Bergstrom, Los Angeles, treasurer.

Ralph C. Flewelling, reporting on activities of the Chapter's competition committee, stated that the Laguna Beach School District had invited the Chapter to conduct a competition for the selection of an architect to design the new Laguna Beach school.

S. B. Marston, member of the public works committee, reported that his committee had been informed by the executive committee of Construction Industries Council, Los Angeles Chamber of Commerce, that they had recommended to the board of directors of the Chamber that the Chapter's public works program be approved.

Carroll Page Fisk, lecturer, was the speaker of the evening, using as his subject, "The Value of Human Contacts."

ARCHITECTS FOR FEDERAL WORK

The selection of architects for building projects financed in whole or in part by the Federal government be determined by merit and aside from any political consideration, was discussed by Southern California architects at a meeting held in the Rosslyn Hotel, Los Angeles, June 19. The plan was drawn up in the form of a petition, which will be forwarded to government authorities when the signatures of all those members of the profession approving the action have been attached.

The petition suggests the adoption of a form of architectural competition as approved last March by the Southern California Chapter, American Institute of Architects. This method of selection, according to its authors, would not only result in the appointment of the architect solely on merit, but would mean a more equitable distribution of commissions and undoubtedly a better type of structures.

That opinions differ on the advisability of endorsing the program as outlined was indicated when a number of architects suggested modifications and additions, while some direct opposition was voiced. One and one-half hours were devoted to a general discussion of the plan, after which the assembly adjourned without having voted on the question.

The meeting was called by the executive committee of the Southern California Chapter, the American Institute of Architects, with Sumner Spaulding, president of the Chapter, presiding. Reginald D. Johnson, chairman of the Chapter's special committee on competitions, and Henry Carlton Newton, Ralph C. Flewelling and H. Roy Kelley, members of the committee, explained the competition program submitted.

OREGON CHAPTER, A.I.A.

The June meeting of Oregon Chapter, A. I. A., was held at Calder's Restaurant with President Parker in the chair.

Members and associates present were Messrs. Parker, Legge, Knighton, MacPike, Brookman, Tucker, Church, Doty, Jacobberger, Schneider, Roehr, Forrest, Aandahl, Wright, Linde, Jones, Wick, Bean, Herzog, Johnston, Sundeleaf, Crowell, Stanton and Howell. The visitors were Messrs. Geo. Wallman and Robt. Turner.

The minutes of meetings held April 17th and May 15th were read and approved.

President Parker presented the following resolution:

"WHEREAS, the members of the special committee on the Renovized House have performed their duties in a highly satisfactory manner, through hard and unremitting labors, without thought of selfish gain, and by these efforts have brought much credit to the Chapter, therefore be it

"RESOLVED, that the Chapter does hereby record its appreciation of the work of Herman Brookman, Kenneth C. Legge, Harold D. Marsh, Frank Roehr, Harold W. Doty, Harrison A. Whitney and William H. Crowell, and acknowledges especial gratitude to Herman Brookman, chairman of the Renovized House committee, and Kenneth C. Legge, who served with distinction as architect for the work."

Mr. Linde moved that the resolution be adopted and recorded in the minutes. The motion was seconded and carried.

Mr. Aandahl moved that the July meeting be a picnic. Seconded and carried. The president announced that the entertainment committee will be instructed to arrange for the affair.

The committee on public information, Frank Roehr, chairman, made a written report. On motion of Mr. Church, the report was accepted.

Mr. Jacobberger, president of the Registered Architects of Oregon, made a report on proposed legislation looking to the strengthening of the architects' registration law.

The meeting recessed for dinner at 7:00 P.M., at which the speakers of the evening were guests.

After dinner, Ben H. Hazen of the Benj. Franklin Savings and Loan Association made a talk explaining the new policy of his company that will include 6% money and no loans made on house construction except those designed by an architect for the particular site. Mr. Hazen was assured that the Chapter would do everything to insure the success of the policy.

Mr. Stanton showed sketches and explained plans in connection with the preservation of the McLoughlin house of Oregon City for the D.A.R. It was moved by Mr. Doty, seconded and carried, that the Chapter voice its support and express confidence in the solution of the problem.

President Parker then introduced Major Bessy, planning consultant to the Pacific N. W. Regional Planning Commission, who made a very instructive talk on the Planning Program which should prove to be of much interest to architects.—L.D.H.

ENGINEERS VISIT BRIDGE

Through the courtesy of General Manager James Reed of the Golden Gate Bridge and Highway District, members of the San Francisco Section, American Society of Civil Engineers and of the Student Chapters were given an opportunity to inspect the Golden Gate Bridge on Saturday, June 23.

About one hundred engineers and fifteen student members assembled at Peterson's Water Taxi dock, near Fort Scott, at one o'clock where they were met by Clay Bernard who conducted the registration ceremonies. Then, in groups of twenty-five or so, the engineers "shoved off" for the bridge. The "Zeitgeist" led the flotilla and although a few white-caps vaulted over the gunwale, with the assistance of the "Sea Wolf" acting as convoy part of the way, a safe landing was made at the materials dock, south of the army dock at Fort Baker. On the way a good view of the south fender construction was had, the concrete being within forty feet of the water level.

The general route of inspection was pioneered by Mr. Baumberger who described in detail the north works. First we encountered the batching plant and sample storage shed, and then worked our way up the north and west faces of the anchor blocks to the south face, where an interesting discussion of the cable anchorage was given.

After inspecting the anchorage blocks, we proceeded to the pylon, from which the cables will play out in pre-arranged order to the intermediate and end eye-bar anchors set in the anchor blocks. After observing the massive anchor blocks, the pylon seemed rather small, but in relation to average building construction it still is plenty large. At this point several camera enthusiasts were seen to go into action, and they had a fine day for their endeavors.

Our next stop was at the foot of the tower, which is about 90% complete. Stiff necks were reported by many of the sightseers due to trying to look straight up to the saddle supports, a height of 746 feet above mean sea level. We were informed that the saddles will measure 12 feet more, to the center line of the cables, which are 32½" in diameter, but that the saddles will not be set for about 90 days. We observed that the north center-section of the cover plates for

MONEL METAL
[*High Nickel Alloy*]

is the accepted material for soda fountains and lunch-room equipment, just as it is the universal metal for food service equipment in leading hotels and restaurants throughout the country.

●

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the third cross-truss was in position to be raised into place, and measured about 12′x34′, although its twin on the south side of the tower appeared to be much smaller. The party was agreed that this "job" is a permanent testimony to the world of what mind can do with matter. The amazing number of rivets in the cover plates, and the spidery elevator cables were the subject of much comment, as was the question of maintenance.

The first return trip was commenced about four o'clock and was without incident.—A. L. Brinckman.

HOSPITAL HAS GAS FIRED EQUIPMENT

By James R. Ferguson

The group of eighteen buildings comprising the new Veterans' Administration Facility in San Francisco will be opened, according to present plans, about August 1. Largest of the group is the main hospital, one of the best planned and equipped units of its kind on the Pacific Coast.

In keeping with the policy of installing the most modern operating equipment, heating equipment is gas-fired and of the very latest design. Fifteen of the buildings are heated from a central heating plant located in the main hospital unit.

Consisting of three 250 H. P. B. & W. Stirling type boilers, the steam plant is provided with King gas burners, and oil burners for auxiliary firing. The entire gas-fired heating plant is ideally designed for the highest efficiency in operation.

Fuel intake and damper and draft operation are all automatically controlled by diaphragm valves actuated by the boiler steam pressure. Each boiler is individually equipped with a CO_2 recorder and draft and steam flow gauges. In operation, the primary air for combustion is taken in at the rear of the boiler and preheated through the floor.

Adjacent to the boiler room and within the same building has been installed the complete gas meter setting, resulting in an exceptionally compact and convenient operating arrangement.

Gas-firing for the heating equipment was selected because of its low cost and high efficiency. Cooking and water heating equipment throughout is also gas-fired.

ARCHITECTS' FEES

The Alameda County board of supervisors have fixed the following schedule for architects' fees, in connection with the design of the new county court house:

If let in one general contract, 6 per cent of total expenditures.

If let on basis of less than 25 per cent segregated contracts, 6 per cent.

If segregation exceeds 25 per cent of total, 8 per cent.

ARCHITECT CAN DO SMALL HOUSES AT A PROFIT

By Alexander T. Saxe, *in Pencil Points*

CONTRARY to the general opinion existing among architects, it is possible for a practitioner to specialize in small residential work and to make a financial success of it. Based on my own experiences of the past three years, during which time I have concentrated on the small house, I am firmly convinced that an enormous field is available for the architect who is properly qualified to handle this work.

But simply going after residential jobs does not bring about success. In order to make a "go" in this field the architect must know his product and his performance must be such as to warrant very favorable comment. He must not only have a knowledge of good design but he must also have a very intimate and thorough education on building cost, grades and qualities of materials and equipment, and a "feeling" for the fitness of all details of residential work.

Adaptability and selectivity are the keynotes in the building industry today for the architect having the ambition to push ahead. Now, more than ever, can the architect step into the key position in a building operation because of the knowledge and advanced training that he has at his command, assuming of course that he makes full use of it.

To cite my own experience, I have "created" work in the residential field by pointing out to my clients that the architect is in a better position to represent him in a professional and advisory capacity than any of the others claiming this distinction heretofore. I have indicated to him the savings possible in building today and have steered him right from the beginning through to the time that he takes possession of his completed house. In short, I have created a desire in his mind to build simply by establishing complete confidence in the safety of his undertaking.

In order to do this without undue hindrance I have been compelled to eliminate the general contractor altogether and to act in the dual capacity of purchasing agent for the owner as well as designing and superintending architect. The rules laid down by the code of ethics applied to architects give them plenty of opportunity to expand their duties in connection with residential work. In my case, instead of assembling the general contract bids for the owner's inspection after plans and specifications are complete, I create a similar competition in each individual sub-contract trade. Then the assembled estimates are all gone over with the owner, and the successful bidders for

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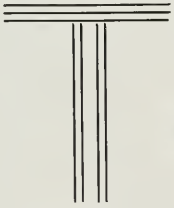

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STEEL COMPANIES MERGE

Effective June 1, the Pacific Coast Steel Corporation—Fabricated Material Division, assumed control of the Pacific Coast activities of McClintic-Marshall Corporation in the sale and fabrication of structural steel and platework.

The new division of the Pacific Coast Steel Corporation will be under the direction of E. F. Gohl, vice-president. General offices are at 20th and Illinois Streets, San Francisco, with plants in Alameda and Los Angeles.

each branch of the work when taken collectively represent a *guaranteed* total cost of the house after my own fee has been added. After all, this is similar to a procedure heretofore practiced, with the possible exception that all the separate contracts are awarded at once to insure and definitely establish the ultimate cost.

Now, more than ever, must the architect permanently set himself up as something more than a "cog in the wheel." During the past decade the responsibilities of the architect have become less and less until, at the present time, his position is such that either he will take over the entire situation in his own hands or else will eventually become nothing more than an employee of the builder. This is undoubtedly and admittedly a blunt way of putting it, but do not all indications point that way? This is the time for the architect to assert himself!

And who can unbiasedly state that the architect is not being shorn of his responsibilties? Every allied profession and business has been creeping in on the work of the architect—the engineer, the builder, the contractor, the sub-contractor, and even the owner. Everybody, it seems, is "more or less" of an architect. Furthermore, the architect must pull himself away from being a competitor of the stock plan book. This competition has, unfortunately, been brought about by the architect himself through his frequent habit of only performing a service equal in scope to that obtained through the purchase of a book of stock plans. Once the architect is made to realize that his services *must* carry beyond the simple drawing of plans and specifications, his services will become more in demand. Just reflect for an instant what the architect has potentially to offer to his client compared to friend contractor. Need we say more?

In creating my own set-up I gave due recognition to the existing state of affairs now confronting the architect, and definitely made up my mind that, above all my services must continue right through the entire construction operation. In the past, the architect, only too often, has placed himself in a position of being the "goat" on a building operation, either because his work ended with the completion of plans and specifications, or else because the contractor was more tactful during construction and took pains to win the client's confidence at the architect's expense.

I am convinced that this is just the right time for the architect to step into his rightful position as true "boss" of the job from the beginning of plan work right through *total completion* of the building. In his capacity as an unbiased professional adviser he should enjoy the complete confidence of his client from beginning to end, instead of allowing himself to be picked apart by

his successors or contemporaries on the job during his absence from the scene, regardless of whether this absence is a *forced* one or not. He must follow through—if necessary at the expense of the people that have picked him apart in the past.

Numerous advantages brought about by this direct relationship established between owner and sub-contractor are most apparent. For example, the cost of building is a guaranteed sum, and is *not* wrapped up in a cost-plus system where the eventual cost is unknown. Then again, the elimination of the general contractor automatically removes the question of credit risk on the part of the various sub-contractors. In the past, the general contractor has always been the go-between and has been the cause of most financial troubles on a job. Contrary to the usual contention, it decidedly has not been the owner's failure to pay. To prove this, is it not common practice for the sub-contractor, when he senses financial trouble on a job, to go over the general contractor's head and demand a direct order of payment from the owner. In this case, the sub-contractor is in possession of the owner's order.

Great savings in cost result through this direct relationship between the owner and sub-contractor, because the contractors are willing to work on a closer percentage of profit, in that they "see" where their money is coming from. Past experience under the old regime has taught them that law-suits and the inability to collect from a none-too-responsible party is bad business. Also the general contractor's profit and overhead is eliminated by this method which also results in a considerable saving.

The straightforwardness of this set-up allows for a certain freedom in the use of materials and equipment on the job which would not be permissible otherwise. This is brought about through the architect costinuing right on to completion, where he serves as the owner's official representative on the job having *direct* dealings with all contractors instead of being compelled to take up all matters of substitutions, extra orders and credits with a so-called intermediary, who can readily take advantage of these changes to make up his profit on the job. The possibilities opened up this way cannot be fully discussed in a short article of this nature, but let us consider a few simple points: (1) the architect's knowledge of the right thing in the right place makes possible a great saving and also a better balance between equipment and materials; (2) the owner may safely make changes during the period of construction without fear of being overcharged, provided, of course, that the architect is equipped with the proper knowledge; and (3) where intelligent savings might be effected the owner gets full benefit.

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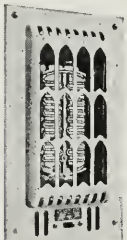

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In this system of building, all payments on the part of the owner are made *direct* to the actual men doing the work — there is no chance of the general contractor receiving a payment and then not paying his bills, thereby jeopardizing the owner's total investment. Through this procedure, a number of men are made jointly financially responsible instead of there being always the possibility of the job succeeding or failing due to the reliability or lack of it on the part of one man. Liens and attachments are of course unknown.

If architects as a group would only adapt themselves to this method of handling a residential job, the future might present a more hopeful aspect. It is quite possible that more and more people would ultimately be convinced that the process of home building is a safe proposition and not the risk that so many feel it is at present. This would eventually result in almost wiping out speculative building on residential work, which this writer feels has altogether been brought about because of a justly timid public. Speculative home building is an evil that should never have existed and is the principal factor behind the present opinion held by many that the individual home is a failure, and that group housing is the ultimate solution.

Just realize for a moment what the architect potentially has to offer to his prospective house client. I am giving the following list of figures based on my own experience in connection with a house recently completed for a client who handled the entire job directly through my organization. Does this compilation succeed in "showing up" the speculatively-built house in its true light? In the right-hand column are my actual cost figures and on the left side we have the exact same house on the same lot built on a speculative basis for the usual sale after completion:

TABLE SHOWING COMPARATIVE COSTS BETWEEN SPECULATIVE HOUSE AND ONE BUILT TO ORDER

Speculative Job	*Item of Cost*	*Owner-Built Job*
$ 900	Property	$ 750
4,850	House (material and labor)	4,500
200	Cost of first mortgage	160
750	Cost of second mortgage	175
110	Interest during construction	100
300	Carrying charges during vacancy after completion	
75	Advertising for sale	
450	Selling commission	
100	Architect's fee	675
1,200	Builder's profit and overhead	
$8,935	*Total Investment*	$6,360

A few simple explanations in connection with the above might be in order. Most of the savings effected have been due to the direct purchasing by the person having the money, in the case of

the owner-built house, as against a questionable credit rating existing in the speculative house project. It is the basic aim of the speculator to pay as little cash as possible in every purchase that he enters into, and he is compelled to work his credit to an infinite degree. If he has a total of $100,000 to invest he will prefer to spread this out into ten houses, where his profit may be tenfold, instead of confining himself to one or two structures.

One glance at the architect's fee in the owner-built column stresses my point of how the architect can build small houses at a profit. In all of my jobs of the past three years I have been able to secure a fee of from 12% to 15% because of the combined responsibility and the net resultant saving shown.

WINDOW SHADE MANUFACTURING

Recognizing the importance of the West Coast as a manufacturing and distributing point, William Volker & Company, a nationally known concern with main offices in Kansas City, Chicago, and Ogdensburg, N.Y., established a sales office and warehouse in San Francisco during the year 1912.

In 1921, a shade cloth painting plant was established in Los Angeles, both buildings being erected and owned by the company. Since that time window shade manufacturing plants have been operated in Oakland, Fresno, Sacramento, Portland, Seattle, and Salt Lake City.

The importance of this industry has extended into the lumber field — sixty carloads of pickets having recently been purchased from the Red River Lumber Company for shipment to New York to be made into shade rollers.

Shade cloth painted in Los Angeles, and also in the various Volker mounting rooms, is distributed throughout Utah, Nevada, California, Oregon and the Hawaiian Islands.

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A three year study made in Tuscumbia, Alabama, schools revealed conclusively that poor lighting increased unconditional failures by more than 300 per cent! The actual expense to the taxpayers for one child to repeat grades was greater than the cost of adequate light — entirely aside from the unfortunate effects on the children's eyes and general welfare!

Many schoolrooms of course are already well lighted. But in almost every region there are some that need attention badly. You may get no large fees for this — we're proposing it to you as a citizen with the public welfare at heart.

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JUNE PERMITS

Los Angeles continued to maintain leadership among the cities reporting largest volume of building permits in June, according to the Western Monthly Building Survey prepared by H. R. Baker & Co. San Francisco was second, followed by Oakland, Stockton, Seattle and San Jose. June permits for the twenty-five leading cities were slightly in excess of May but approximately 21% lower than for the corresponding month last year. Total for June was $4,232,189 compared with $4,104,224 in May 1934 and $5,371,094 in June 1933.

Total volume of building permits for the seventy-six cities reporting in June amounted to $4,769,566 compared with $6,690,340 in the same month last year. Nine cities were added to the group of twenty-five leading cities reporting largest volume of permits during June. They were:—San Jose, Inglewood, Salt Lake City, Santa Barbara, Reno, Huntington Park, Riverside, Bakersfield and Boise.

Sixteen cities reported an increase in June over May, and seventeen reported an increase in June over the corresponding month last year. Those cities reporting increases in June over both the previous month and corresponding month last year were:—Oakland, Stockton, San Jose, Pasadena, Inglewood, Salt Lake City, Santa Barbara, Reno, Huntington Park, Riverside, Spokane, Bakersfield and Boise. In addition, Seattle, Phoenix, Tucson and Glendale reported an increase in June over last year, while the following cities showed increase in June over May: — Vancouver, B. C., Long Beach and San Diego.

HOUSING

The Federal drive to spur home owners into making work for the construction industries contemplates turning upward of $800,000,000 out of Government and private pockets before winter comes.

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The new housing administrator, James A. Moffett, expects a flow of about $500,000,000 in private funds into home renovating before autumn.

The Home Owners' Loan Corporation now has a fund of $300,000,000 for maintaining and reconditioning homes it has financed. Some 288,000 applications already have been received.

Moffett estimated employment would be found for 5,000,000 men due to his end of the housing program, with more thousands to be given jobs through the new HOLC plan. Secretary Ickes, the PWA administrator, is authority for the statement that better than a half million men are at work due to the public works program.

Some 544,000 men were at work on Federal and non-Federal projects in the week ending June 23, a 300,000 upward swing in this type of governmental employment relief in the 15 weeks' period since the low point for winter.

PROTEST

A protest against the employment of Edward Glass and Charles E. Butner as consulting architects on the proposed Fresno Auditorium construction was filed with the City Commission by Paul Gregg, secretary of the Building Owners and Managers' Association.

Gregg declares in his letter that "taxpayers feel" the $24,000 fee to be paid the Allied Architects of Fresno for preparing the plans should be sufficient to cover that cost, being 6 per cent of the construction figure, and that the payment of an additional $1,000 is not necessary.

The City Commission made the arrangement by which the consultants would be appointed after W. D. Coates Jr., representing the Allied Architects, recalled to the commission that it had pledged to award the plan drawings to the group. Glass and Butner protested they should be allowed a portion of the work.

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FEDERAL SURVEY OF HOUSING CONDITIONS AT SAN DIEGO, CALIF.

The development of San Diego, California, during the period from 1924 to 1928 was remarkable. Almost one-third of the residential structures standing in that area were reported to have been built between those years. The record of this expansion forms part of a preliminary report of the Real Property Inventory made public in Washington by C. T. Murchison, Director of the Bureau of Foreign and Domestic Commerce, of which the Inventory is a unit. The summary for San Diego includes figures for the metropolitan district, covering the city proper and its environs.

San Diego is one of sixty-four surveyed for housing conditions by field enumerators who worked under the general supervision of the Census Bureau. Data were obtained on structures, occupancy and vacancy, rentals and property values, living quarters, and on sanitary and domestic conveniences. This information is being tabulated in Washington, D.C.

Questions asked by the door-to-door enumerators regarding the condition of the structures and their facilities were selected in collaboration with experts in the housing field, architects, representatives of the building and construction industry, building material manufacturers, plumbing and heating supply manufacturers, manufacturers of modern household appliances, and other experts in allied phases of the building industry.

The information obtained should be of great value to those interested in civic development and improvement as well as those connected with building, maintenance, appliance manufacturing and distributing.

The survey of San Diego showed that, exclusive of clubs, rooming-houses, hotels and summer cottages, there are 52,565 residential

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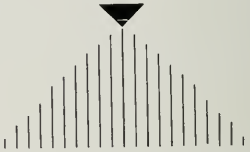

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structures in the area, of which 92 per cent are designed for single families.

Wood is the prevailing building material, having been used in the erection of 39,303 structures. Stucco, not used very extensively in the other cities studied in this survey, has been employed more widely in San Diego, almost 24 per cent of all the houses being recorded as built of stucco. The number of brick dwellings reported is almost negligible.

Ninety-four per cent of San Diego's structures were erected since 1899, and 42 per cent of them are said to be less than ten years old. As was to be expected of dwellings of such recent origin, the local enumerators reported 25,019 structures in good shape, and 20,577 as needing only minor repairs. These figures account for more than 86 per cent of the housing of the area. Of the balance, 6,088 structures were described as requiring major repairs and 812 were specified as unfit for use, based upon local standards.

San Diego appears to be well provided with garage space. Garages, with a capacity of 53,765 cars, were reported as attached to the property of 78 per cent of the dwellings.

The 52,565 residential structures of San Diego contain 63,695 dwelling units. In addition to the 48,462 single-family units and 628 units in row houses, the area is reported as having 6,800 apartments and 7,805 flats.

Five-room units predominate among the dwelling quarters of San Diego. Nearly 30 per cent of the total dwellings are found in this group.

FEDERAL BUILDINGS

Approval of 302 additional Federal building projects and steps to push 324 other such projects in all sections of the country at a combined cost of $110,000,000 is announced by Secretary of Treasury Henry Morgenthau, Jr.

Among the 302 new projects to be launched are:

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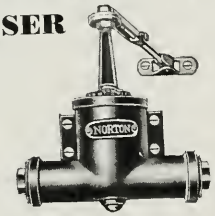

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South Gate, postoffice, building.
Long Beach, postoffice, remodeling.
San Diego, postoffice, building.

Projects authorized under other funds and which are to be placed under contract as rapidly as plans can be prepared include the following:

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San Rafael, postoffice.
Redding, postoffice.
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Hollister, postoffice.
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Salinas, postoffice.
Santa Cruz, postoffice.
Madera, postoffice.
Turlock, postoffice.
Ventura, postoffice.
North Hollywood, postoffice.
South Pasadena, postoffice.

German and Greek architects attempted to restore the temple to its original delicate beauty, but lack of experience in this type of problem resulted in a reconstruction lacking in permanence. Violent storms or even slight earthquakes threaten the edifice.—*Science News Letter.*

⁂ ⁂ ⁂

THE little temple of Nike, or Victory, one of the architectural gems on the Acropolis in Athens, is in danger of caving in. Architects, investigating the foundations, reported the weakness of the structure.

As a result of the report, arrangements are now being made to take down the temple and rebuild the base on which it stands. The temple will then be set up again on the new, firm foundation. The project is expected to require a year. Temporary removal of the building is welcomed by archaeologists, who see a chance to learn whether a still more ancient structure stood on the site of the Temple of Victory.

The Nike temple was built about 410 B. C. and stood until 1687, when it was damaged in the bombardment of Athens by the Venetians. The Turks at that time took the temple materials to use in building a bastion. About a century ago,

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THE ARCHITECT AND ENGINEER

AUGUST 1934

...This Issue...

SOME RECENT WORK OF W. R. YELLAND, ARCHITECT

■ ■ ■

ELLIS F. LAWRENCE TELLS OF MENACE TO OUR SCHOOLS OF ARCHITECTURE

■ ■ ■

THIRD INSTALLMENT OF WORK BY THE HISTORIC AMERICAN BUILDINGS SURVEY

■ ■ ■

San Francisco Apartment House Remodeled Into Modern Banking Quarters

■ ■ ■

IMPORTANT COURT DECISION AFFECTING AN ARCHITECT'S CONTRACT WITH CLIENT

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Sandblasting—A Subject Upon Which Architects Need to Better Inform Themselves

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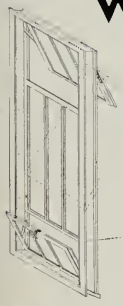

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IF YOU had a son of college entrance age, would you advise him to elect engineering as his career? If you have talked or written replies to as many engineering graduates seeking jobs during the last three years as we have, says a writer in *Electrical West*, the answer would be "No."

Heartening to all engineers will be the results of a study conducted by A. T. & T. which proves conclusively that such an answer is wrong. By relating the actual numbers of engineers graduated to a trend line of the requirements of industry and business for technically trained men, this study shows that the 1934, 1935, 1936 and 1937 graduating classes will produce far less than the number required. Furthermore, it shows that by 1937 the accumulated surplus of engineers from the last three graduating classes will be more than absorbed and that an actual shortage will exist in 1938, when the boy who enters college this fall will be graduated.

• • •

CALIFORNIA'S exhibit at the 1934 Century of Progress Exposition in Chicago, is said to be attracting an average of 50,000 visitors daily.

An outstanding feature of the exhibit is a glass-enclosed space, 27 feet by 15 feet, displaying an exact model of the City of San Francisco. It contains about 40,000 miniature houses and buildings, all made to scale from redwood. The waterfront and fleet anchorage are shown in detail, as are countless other landmarks. The model was built by Rudolph G. Theurkauf, native San Franciscan, at a cost of $30,000.

Second in popularity is a large diorama of San Francisco as seen from Mount Tamalpais, pointing out the site just north of Yerba Buena where it is proposed to create an artificial island, covering a square mile, on which to hold a world fair in 1937 to celebrate the completion of the San Francisco - Oakland and Golden Gate Bridges.

• • •

WITH current reports from the real property inventory of leading cities in the United States showing that one out of every seven houses is between 30 and 40 years old and with the heavy stress now being laid on home modernization, the United States Building and Loan League is preparing to make some recommendations about modernizing this particular age group of houses. The home building and home owning committee of the League is now carrying on research for an extensive report on the subject.

A recent bulletin shows two examples of what is meant in concrete terms by "modernization."

Case No. 1 is a frame house built 39 years ago in one of the metropolitan sections of the country, and appraised at present price levels at $10,000. The owner got an advance of $3500 from his local building and loan association, repayable in monthly installments of $38 and not only put numerous building tradesmen to work with his project but brought his home distinctly up to date.

"The house had a splendid downstairs arrangement, but the upstairs was more or less of a loss as far as living quarters were concerned, having remained for nearly 40 years practically in the attic state," says the report. "With the modernization loan the owner made three bedrooms out of the second floor, one 15 by 15 feet, another 15 by 18 feet, and still another 15 by 32 feet which can also be used as a living room.

Several closets were added, a new stairway up to the second floor built in, a new heating plant to take adequate care of heating the upstairs as well as the downstairs, with the most modern methods, was installed, the entire house was redecorated on the inside and painted on the outside.

Case No. 2, as reviewed in the report, is an example of a home in the same age group, which is being remodeled but no structural changes are being made. It is the less expensive type of modernizing project. The home in question was owned debt-free by the family which borrowed $850 to give the house complete 1934 advantages. The list of changes made includes a new roof, complete new bathroom fixtures, new short oak flooring to replace the former pine floors, modern built-in cabinets for the kitchen, inlaid linoleum floors for kitchen and bathroom, up-to-date electrical fixtures, wall plugs newy located in convenient spots, all of the walls repapered and the exterior painted completely.

There should be a lively exchange of ideas among all of the business concerns interested in modernization, particularly among those which finance the remodeling activities.

A NEW service to prospective builders of houses has recently been inaugurated by the City of Paris, San Francisco. It is termed the Architects' Home Building Service. An interesting and diversified display has been arranged which includes floor plans and sketches for a great variety of houses, all of them suitable to the California landscape and climate. Spanish, Norman English, rustic English, Dutch Colonial and Mediterranean styles of architecture are represented — also some charming rustic country houses.

The service concentrates on small houses, that is, houses that can be built for five thousand dollars or less. But notwithstanding the price limitation, all of them boast character and charm and are remarkably complete in their appointments and provisions for small families. Most of the plans are suitable for either city lots of small dimensions or for country sites.

Architects who have contributed their work include Frederick H. Reimers, Wm. I. Garren, James H. Mitchell, Martin Rist, Irving Morrow, Gardiner Dailey, Wm. Merchant, Wm. Clement Ambrose, Ellsworth Johnson, Kent and Hass, Hervey P. Clark, Albert Farr, David and Birge Clark, Edward Kress, Bertz, Winter and Maury and Louis Upton.

• • •

TO modernize seems to be the watchword of the building industry and it is gratifying to note that the architects are falling in line. The latest stimulant is a competition conducted by *Good Housekeeping* for the best remodeled exterior for which a prize of $500 and a gold medal is offered; also for the best remodeled interior for which similar awards are promised. The contest closes June 30, 1935. The following six items must be submitted: 1. Pictures taken before remodeling. 2. Pictures taken after remodeling. 3. Floor plans. 4. List of materials used. 5. Itemized costs of alteration or renovation. 6. A short article describing the work; this article must not exceed five hundred words. The jury will be composed of Frederick Ackerman, F.A.I.A., Authority on Housing and City Planning; Arthur Loomis Harmon, F.A.I.A., President Architectural League of N.Y.; Dwight James Baum, F. A. I. A., Gold Medalist, Architectural League of N.Y.; Arthur I. Meigs, F.A.I.A., Gold Medalist, Architectural League of N. Y., and Frank Forster, A.I.A.

VOLUME 118
NUMBER 2

THE ARCHITECT AND ENGINEER

AUGUST
1934

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W. R. Yelland, Architect

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HOUSE OF MR. AND MRS. HERMAN H. BISHOPRIC,
WILDWOOD GARDENS, PIEDMONT, CALIFORNIA
W. R. YELLAND, ARCHITECT

THE ARCHITECT AND ENGINEER

AUGUST 1934
VOLUME 118
NUMBER TWO

Living With Him

Architect's Wife Tells

"WELL," says the architect, unfolding his napkin at the dinner table, "I'm in for it again."

"One of those dream houses?" asks Mrs. Architect apprehensively.

"Yes, a dream house. With a forty-foot living room, five fireplaces and four baths. And a room for the client's little girl that shows *fairy* thinking; in fact she said "I want you to do your *fairy*-est thinking for Claribel's room."

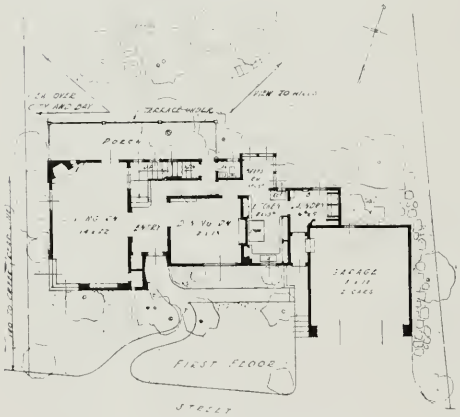
"The cost to be—?"

"Four thousand dollars!" says the architect, "and no fairy thinking about that. It's all there is." A familiar expression settles on his brow. He gazes at his plate, seeing, his wife knows, not steak but a chimney, sgraffeto, a gable end. He reaches for a pencil, and a design grows on the tablecloth.

Then Mrs. Mutchmor Smith's house draws the architect into its insatiable maw. He works late at night, and when he comes home to sleep, starts from his bed at unseasonable hours to make notes. Mrs. Mutchmor Smith will never know how many of the delicate details of her new house have been worked out in striped pajamas. She enters the office frequently, prettily determined, to mention something more that should be included—a terrace, a solarium, another bathroom. Perhaps she weeps at the suggestion that these things cannot all be achieved for four thousand dollars, and that night the architect's hair stands more than ever awry as he strives further to make the impossible possible. Mrs. Architect, in spite of a resolve not to become excited about one more unprofitable job, catches the current fever and pores over drawings, while Baby Architect is forgotten and swallows a chenille ball from the curtain fringe.

Construction begins. This is known as the Dirty Clothes period. The architect seems to spend his time crawling about on hands and knees, snagging rents in his garments and smearing them with mortar and paint until the Goodwill Industries, driving by, marks them for its own. When brickwork is being done he cannot watch it long before an unease comes upon him, and he falls to chipping bricks and laying courses

HOUSE OF MR. AND MRS. HERMAN H. BISHOPRIC, WILDWOOD GARDENS, PIEDMONT, CALIFORNIA
W. R. Yelland, Architect



FIRST FLOOR PLAN, HOUSE OF MR. AND MRS. HERMAN BISHOPRIC, PIEDMONT, CALIFORNIA
W. R. Yelland, Architect

so that they may appear exactly as they do to his fevered inward eye.

That architect, with his inward eye, sees something no one else can, as building proceeds. About midway of the construction the house bears a fantastic appearance; the architect has an unhappy feeling that the neighbors are getting together on the subject, and Mrs. Mutchmor Smith, hovering fearfully about, sure that something is going wrong with the dream plumbing, clings for comfort to the pretty pictures he made for her in the beginning. The builder by this time has shrugged his shoulders and washed his hands of all responsibility for the look of the thing, but, grimly loyal, continues to do as the architect wishes. Per-

STAIRCASE AND LIVING ROOM, HOUSE OF MR. AND MRS. HERMAN BISHOPRIC, WILDWOOD GARDENS, PIEDMONT, CALIFORNIA
W. R. Yelland, Architect

haps one day a passer-by speaks to the soiled person with plaster in his hair who is standing apart appraising a chimney shaft, and says, as man to man, isn't It terrible?

During all this period the architect appears to be in anguish and refuses to eat, but his wife knows he is thoroughly happy, harboring his vision. And one day a house stands completed upon the property of Mrs. Smith. Perhaps it has not the ball room, the solarium, the dim vistas of her dream, but it holds the quality of her dream within the narrow confines of four thousand dollars.

The architect walks about the house, looking at every corner and corbel studied

HOUSE OF H. H. BISHOPRIC

Wildwood Gardens, Piedmont

W. R. YELLAND, *Architect*

Construction—Stucco on wood frame.

Exterior—All white with dull blue sash.

Sash—Wood and steel.

Interior—Stucco with Oregon pine ceilings in living room and hall, sandblasted and waxed.

Floors—Random width oak.

Roof—Heavy red cedar shakes.

Plumbing—Crane fixtures.

Heating—Alladin hot air system.

HOUSE OF MR. AND MRS. G. W. LUBOWSKI,
BERKELEY, CALIFORNIA
W. R. YELLAND, ARCHITECT

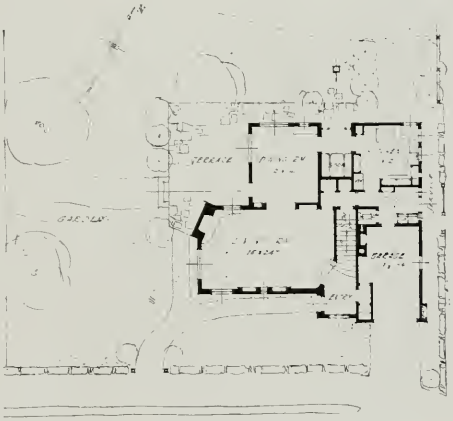
HOUSE OF MR. AND MRS. G. W. LUBOWSKI, BERKELEY, CALIFORNIA
W. R. Yelland, Architect

at midnight and at dawn. Mrs. Architect, watching, knows a little what his labors have yielded him. In tangible things, not much; a new suit of clothes, perhaps, to replace those abused garments, some tires for the Ford. But he is admitted, by just a little more, to the great company of workers in the creative arts, who have always fed the spirit better than the flesh, whose souls, like John Brown's, go marching on when their bodies lie moldering. And is he not a privileged man who sets forth dreams in mortar and brick?

* * *

Some Comment on the Houses

While the Mediterranean influence which frequently appears in this designer's work is not present in the houses shown here, a



FIRST FLOOR PLAN, HOUSE OF MR. AND MRS. G. W. LUBOWSKI, BERKELEY, CALIFORNIA
W. R. Yelland, Architect

LIVING ROOM, HOUSE OF MR. AND MRS. G. W. LUBOWSKI, BERKELEY, CALIFORNIA
W. R. Yelland, Architect

traveler will recognize in them certain European characteristics. The vigorous window of the Lubowski house, with its definite profiled wall, might be found anywhere from Amsterdam to the Loire, and the gables of the Bishopric house suggest the vicinity of the river Avon. An endeavor has been made to employ all the natural possibilities of the surroundings, the slopes, curves, trees and stream.

Interest lies especially in the interiors, studied for pleasant living. All who cross the threshold are meant to feel the welcome of the house, to be drawn on through its

HOUSE OF G. W. LUBOWSKI

Encina Place, Berkeley

W. R. YELLAND, *Architect*

Construction—Stucco on wood frame.
Exterior—All white. Dull green sash.
Sash—Wood and steel.
Interior—Buff colored plaster. Common brick fireplace.
Floors—Oak plank.
Roof—Cedar shakes weathered to silver gray.
Insulation—Pabco building paper.
Heating—Hot air system.

rooms by its warmth and friendliness. A certain degree of seclusion from the street has been sought, but, once inside, one feels relaxation and expansiveness. Orientation of windows, fireplaces, balconies, so important to balance and charm, has been given much attention here.

The architect thinks it is vital to follow up the job closely, to be present himself. Brick and plaster should not be regarded as common materials, but as fabrics, developing a desired quality as warp and woof are laid.

BUILDING FOR THE GEORGE R. BORRMANN STEEL COMPANY, OAKLAND
W. R. Yelland, Architect

Courtesy Photo Art Monthly

STREET SCENE—PHOTO BY JULIUS ASCHAUER

Looking Ahead

by Ellis F. Lawrence, F. A. I. A.

Here is the second installment of Mr. Lawrence's interesting report on Architectural Education, the first having appeared in the July number of this magazine. Mr. Lawrence's frank outline of conditions in our colleges and schools with special reference to the teaching of architecture astounded many readers. In this chapter he further enlarges upon the situation and offers suggestions that should be helpful in bringing about some needed changes in the old system.

MANY interesting responses came to the question of what are the greatest weaknesses in our architectural education. One says "the present system is not at all bad." One thinks it is the failure of all schools to accept the five year course. Others — that the student work for credits instead of a thorough education; and "the greatest weakness is in the rigid accounting of credit units as a basis for advancements of students." The following quotations from some of the answers tell their own stories:

"Failure of the architects to take their proper place in the building industry."

"Lack of coordination between practice and college work."

"Getting staff to think in terms of architecture and not in terms of their specialized subject."

"Greatest weakness lies in school's failure to realize need for greater adaptation to the changes occurring about us", and "lack of correlation of our different subjects".

"Changing social and economic conditions will produce a new architectural practice and an altered type of education. Just what? Who knows?" Several agree with the writer who says, "The Profession itself hardly knows what it wants or what it is trying to do." He continues — "It should all be very simple. The purpose of architecture is to create buildings that function as perfectly as possible and are beautiful. The former is receiving all the emphasis today and we are forgetting that beauty costs money, if only the study required to attain it. The Parthenon would have been cheaper without the sculpture and it is no earthly use."

Last but not the least is this:

"I think anyone who says 'things are quite all right as they are', is sounding the death knell of education. The greatest weakness and most difficult problem is the relationship between structure and design —and between social and economic needs and design." With this, several express sentiments in common.

You will no doubt agree this shows that our architectural schools are alive to widening vistas and are seeking their place in the new order. The testimony given, indicates open minds and a willingness to take new paths. I congratulate the schools for not abjectly surrendering to the forces of depression—for searching deeper for truth. It is very good to see many turning to the

ever eternal concept of education, realizing that ours is but a part of the whole and that we must master an understanding of modern problems of economics, sociology, government, politics and taxation if we are to master our field of architectural education. To be frank, these are going to shape our destiny if we do not shape them.

Let us not forget in our desire for reality and practicability; for correlation of courses and for the socialization of architecture —those emotions which beauty stimulates — as so aptly expressed by Louis LeBeaume: "The Peace of Harmony, the Satisfaction of Balance, the Elation of Sincerity, the Comfort of Rhythm."

After all, our most important job is to open the flood gates of self expression, to make possible the beauty that is art.

To remove every obstacle in the way of self-education and self-expression should be our immediate aim.

* * *

The Second Chapter of this swan song of mine, shorter I assure you than the first, deals with my own interpretation of certain basic weaknesses, applicable as I see them, to the problems of education as well as to those of society. To start with, here is a poem by Edwin Markham, written after he was eighty years old:

"The Look Ahead"

"I am done with the years that were; I am quits:
I am done with the dead and old.
They are mines worked out: I delved in their pits:
I have saved their grain of gold.

Now I turn to the future for wine and bread;
I have bidden the past adieu.
I laugh and lift hands to the years ahead:
Come on, I am ready for you!"

The Agony of Fear

I wonder if there is a man in this day who has not felt the agony of fear in one form or another, during these past three years; fear of losing his job or what little is left of his savings, his insurance or his annuity program: fear of what the future held for him, and his ideals for the things he deems most precious.

Is there one of us who has not asked "Where do we go from here?"; "What is the trouble, anyway?"; "What is wrong with the system?"; "What can be done to profit by the lessons these tragic times are teaching us or should be teaching us?"

We aren't cowards enough to refrain from making "The Look Ahead" and we do want to be ready for what is to come.

Education, altho as some one has said "A balanced budget means unbalanced children", has perhaps suffered most in the name of economy. But it is not alone in the break down, for politics and government and economics; business and industrialism, capital and labor; the democratic ideal; religion and ethics, all are shaken to their roots. We are bewildered for we know, these all tied together, are molding our fate.

Politics has come to mean a thing tainted with selfishness and intrigue, not enlightened public service. Government, to cope with chaos, demands more and more concentrated power, pacifies its constituents with forms of dole and socialism and forgets our ideal of government which depends on the functioning of small workable units.

Economics fail to seek natural law — throughout the depression few indeed have made mention of Land and Rent—the third factor in the equation necessary to its solving. The dean of economists recently wrote "We don't talk of these". Think of such a situation—the lips of the experts sealed when more than ever we want the truth wherever it hits.

Business and industry forgot their ethics and public service. Now they are groaning

at the socialization of what was considered the prerogative of self interest. Capital and labor are as usual being hurled at each others throat, when in reality theirs should be a common fight. An investigation of where the cost dollar goes proves this.

The Failure of Democracy

The church surrenders to law, the training in temperance and ethical conduct, and retires to its quiet cloisters. Democracy, we are told has failed. Has it ever been really tried? I wonder. Any way it is tragic to see youth distrustful and skeptical of this, the greatest ideal man has yet evolved.

How much education is to blame for this, or how much it has suffered, can not be dwelt upon here. We know, however, that education has a hard time to assert its leadership, when monopoly and propaganda stalk and stage and when men are afraid to tell their deepest beliefs and convictions. Education can't do much today to save democracy. It could have done much and it can do much for the future. For the moment, the fate of democracy lies in the hands of those in power, the leaders of politics and industry, the banker with his control of credit, the monopolist of land and natural resource, and the purveyor of news.

What we want in "The Look Ahead", is to find antidotes to the poisons which have brought about our present predicament.

I submit, with all humbleness, three of these poisons and suggest possible antidotes:

1. The mechanism, essential to enlightened group thought and action, is faulty.
2. We have attempted to build a social consciousness without correlating the component parts which make up its totality.
3. We lack fixed ideas or deep convictions.

You may ask, "What has all this to do with architectural education?" If so, I answer—"Everything." What it is doing to us and what we are doing about it, are now far more important than how we teach construction, drawing or design. We are in a revolution, altho the president spells it without the "R". "The Look Ahead" demands our earnest attention if we are to be ready for what is ahead.

Faulty Mechanism

Unless you have surrendered to dictatorship, you will agree no doubt, that group thought and action are the keys to any successful democratic undertaking. This applies to government, industry and education. Until we organize society so that each may contribute to communal life, influenced by contacts with experts or those who know; until each is lured into community effort, freely and willingly, each as a vital part of the whole; until we have free speech and free action made safe: in short, until we build from the bottom up and not from the top down. We have no right to abandon the ideal until we fix the mechanism by which it may function.

In government the correction might take the form of small divisions, tapping special interests such as open fora of Health, Recreation, Art, Education, City Planning, Social Work, Government, Taxation, Industrial Relations, etc. These might function as did the old town meeting. From them, Councils of experts would be elected to prepare Community Programs. Each Council would elect representatives to the Federated Councils which would coordinate and pass upon the programs. From such an experiment, might come a new dignity to democracy, a pride in citizenship, and a fair chance for the services of experts. Leaders would emerge and they

would soon be drafted into public service. This idea is spreading through efforts of a National organization. I suggest you pass it along to your students who, if they are like mine, are floundering in the subject of democracy.

As to industry, the Building Congresses prove what can be done, but all elements must be included. NRA fails when it divides labor from employer groups. Fourteen years of personal experience in this Congress movement, has convinced me my convictions are justified that democracy in industry can work.

In education, the mechanism by which the group functions is just as vital, for it deals with relationships between individuals; student and student; student and teacher, teacher and teacher; teacher and administrative office; administration and Board of Governors; Board of Governors and the public. We know too well what a price education pays when any of these go wrong.

Remember Saarinen's ideal architectural school: "A happy home in which students are encouraged to educate themselves". We, the teachers can't really educate the students. They must do it themselves. We can't superimpose on them a group thought or ideal. It must evolve from the group itself. To do this, students should be self-governing—free, not under orders. Freedom-without-license should be a product of education. The best way to learn is from experience.

No barriers should exist between teachers and students. There should be no false motivation such as grades, honors and awards. Education in the creative arts, especially, needs no artificial stimulus. Students shouldn't be competing against each other. Each should compete only with himself to make the most of what ever God happened to endow him with. Each is an individual problem and should be treated as such. Neither should teachers be under orders. They, too, must be free. The dean must not be a dictator. The teaching group also should be self-governing, gaining full rewards for their efficiency.

I believe teachers and students should have a part in administration, and teachers, being educational experts, should be represented on the governing board. At present, governing boards are too often self-perpetuating or political. Elected representatives from alumni and teachers would help to secure capable service.

Encourage Inter-Relationships

Education can't be ideal until these inter-relationships are right. We may not be able to do much to change the format of Boards of Governors or the setup of our overlords, but we should, if we are worthy of our hire, so organize our own departments as to remove all barriers to harmonious internal relationships and to self education and self expression. Above all, let us make our group as far as it is possible, a real part of society — at least not let it become an aristocracy of brains or art.

In our blindness, we have allowed our system to build up impediments and barriers. Why not now fix the mechanism under which we labor and let democracy, education and human nature have a chance to survive — before we chuck the best of the old, for new isms. Until we do, we cannot make use of what is best in us, that I know; and we cannot be really ready for what is to come—unless by chance we are all to be told by a Hitler how and what to do.

"We have attempted to build a social consciousness without correlating the component parts which make up its totality."

It is hardly necessary to amplify this thought to you who have already in your answer to my questionnaire, shown so clearly that you agree.

How often we meet with it! How often it spells defeat to forward looking contributions to community life. The social worker "won't be a tail to anybody's kite", and by playing the lone wolf forgets, for example, that the artist can help him in every field in which he so sincerely works—be it Health, Mental Hygiene, Recreation, Education, Industry, Rural Life, Child Welfare, or the Problems of the Immigrant.

The architects form a cult, and are laughed at by the business man. The average engineer refuses to allow his emotions or intuitions to have a say, and the curbing of them often robs him of a place in the hall of Fame. Every great engineer I've known has been an artist. Capital and labor not considering the natural laws of economics keep fighting each other instead of their common enemy. So it goes. We are all divided into vertical compartments. We are wearing blinders most of the time —not thinking in the big. Education, dependent on politics, government, civic consciousness, economics, taxation, sociology, ethics, hardly dares publicly to express itself on any of them, lest the closed minds of the tax payer be offended. But we can, in architectural education, break down the compartments. We can vitalize the cognitives those teachable, factural statistical things, as Suzzallo once said, by drawing on aesthetics, ethics, and morals. We can free intuition and emotion to the advantage of the intellect. We can make a program for a design project, the vehicle of teaching sociology, politics, education, economics, yes and ethics—as well as one for teaching structure, hydraulics, illumination and the laws of design.

I am pleading for the rich life—the full life and protesting against the smug, intolerant, self satisfied things I see too much of. Our schools can help, but we can't do it unless we teachers, ourselves, are ready to let the bars down—widen our vistas and reassert our willingness to tackle the world problems. If we believe in human nature, we must do this. It is as it is only because in our indifference, we have built obstacles and blighted its blossoming.

* * *

"We lack the fixed ideas—or deep convictions," some one writes.

How we have needed and prayed for leadership these days! We have, perhaps wisely, educated for the open mind and the questioning attitude, but as a result, we look askance at the man with a fixed idea or with a fixation. Then comes a time, however, a crisis, in which convictions must be deep enough to fight for them. In this regard are we not a bit flabby compared with the men of other ages? We must have convictions and fixed ideas in days like these if we are to preserve the best the ages have given civilization.

In architectural education, perhaps we can seize upon some fixed ideas with conviction—can we not?

A Group of "Ideals"

What would these be? I give you some of mine, already touched upon in part which, if added to yours and stirred and boiled well in the cauldron, might make a potent brew worth calling our "group ideals".

Every student is an individual problem. He has certain talents fate has given him. These he must develop himself. He may arrive in a few or many years, or never. All we can do is to guide, to place him in an environment where he can be free to spread such wings as he has.

This means beware of standardization of content or length of courses: of false motivation, of mass teaching and faulty inter-relationship.

Every teacher must be free. His method is of little value compared with his person-

ality. No barriers should be allowed between him and the student.

This means down with competitions, grades and honors, with vertical departmentalization; with programs superimposed by others over whom the teacher has no control.

Architecture is the product of group effort. The Gothic ideal is more timely for us than is the Renaissance. Architecture is the mother art. It can't breathe complete beauty without the help of the other arts.

This means team play, harmony in diversity, without loss of freedom, and it means the closest understanding and fellowship among the arts involved.

Architecture is a projection of the society it serves. To teach it well, it cannot be separated from the ideals and standards of that society. This means that every problem in design should be a vehicle for teaching and understanding of that society.

Perhaps 90% of all human action and achievement comes from the emotions or intuitive life. The intellect, without being tempered by these, can become a cruel thing. This means ours is a very sacred trust and we must be very, very humble before that trust.

Architecture, while it depends on science and business is primarily an art.

This means we must keep the lamp of beauty burning. Who else will save it for future generations?

* * *

This has been a very rambling and no doubt disconcerted discourse. If it were not for the depression I would not have inflicted it on you, but it comes from the best I have to give.

Recently, I happened on this which Wm. Morris wrote many years ago:

> "Meanwhile, if these hours be dark, as indeed, in many ways they are, at least do not let us sit deedless, like fools and fine gentlemen, thinking the common toil not good enough for us and beaten by the muddle; but rather let us work like good fellows, trying by some dim candlelight to set our workshop ready against tomorrow's day light—that tomorrow, when the civilized world, no longer greedy, strifeful, and distrustive, shall have a new art, a glorious art, made by the people and for the people, as a happiness to the maker and the user."

Perhaps you read "Why are Teachers?" by Don Herold in a recent issue of *Today*. I quote its closing—sentence: (speaking of his little daughter.)

"How many of her teachers have the candlepower to illuminate very much of life for her—or even the desire—or the idea? So many of them know only to teach what's in a book.

"To them I say—*'To heck with the books, here is a soul on our hands — and yours!'* "

HISTORIC AMERICAN BUILDINGS SURVEY

NATIONAL PARK SERVICE
U. S. DEPARTMENT OF THE INTERIOR

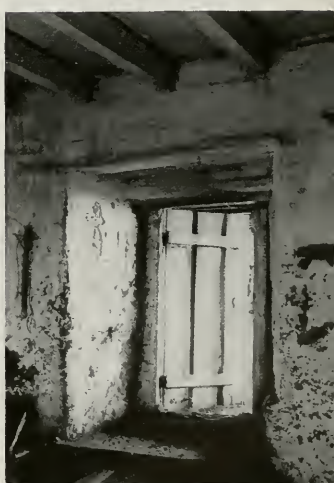
DISTRICT NO. 38
IRVING F. MORROW
DISTRICT OFFICER

Portfolio No. Three

Vallejo Adobe near Petaluma
(Detail at right)

Adobe town house in San Juan

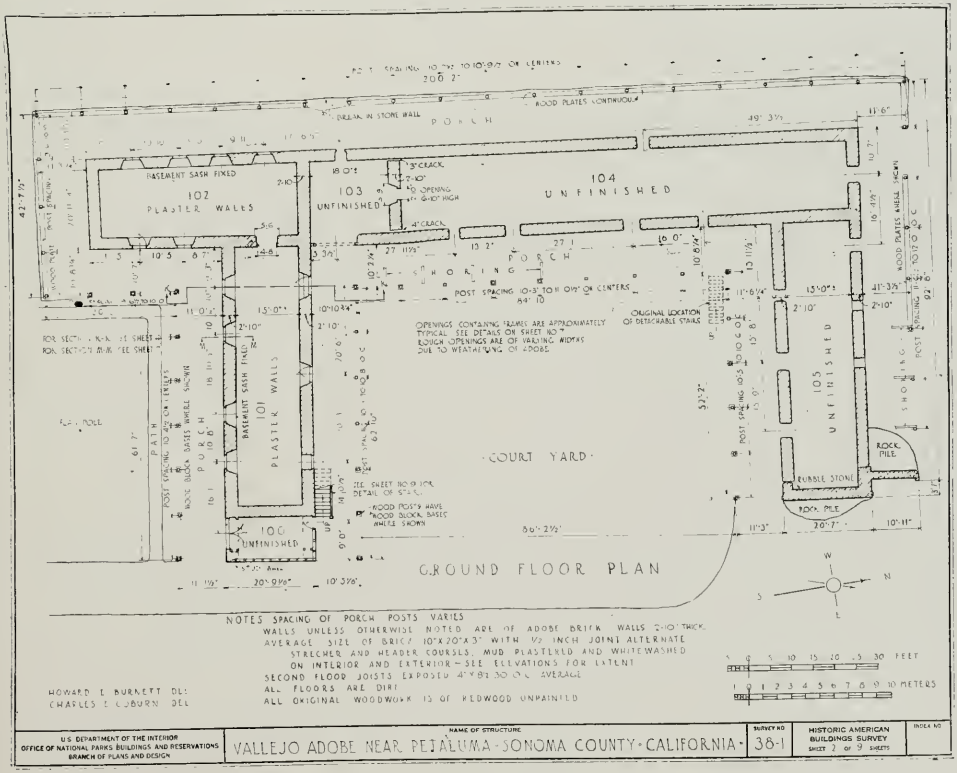
Photos by Roger Sturtevant



VALLEJO ADOBE NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA. THIS BUILDING WAS STARTED IN 1834 BY GENERAL MARIANO VALLEJO. IT IS NOW THE PROPERTY OF PETALUMA PARLOR NO. 27, NATIVE SONS OF THE GOLDEN WEST.

PLAN, VALLEJO ADOBE NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA.

THE BUILDING, U-SHAPED IN PLAN, IS BUILT OF ADOBE BRICKS AND ENTIRELY SURROUNDED BY WOOD PORCHES AT EACH FLOOR.

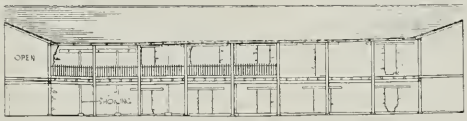


U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS BUILDINGS AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE VALLEJO ADOBE NEAR PETALUMA - SONOMA COUNTY - CALIFORNIA	SURVEY NO 38-1	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 2 OF 9 SHEETS	INDEX NO

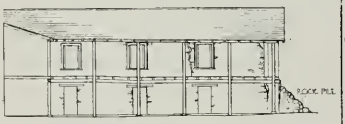
VALLEJO ADOBE NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA. LUMBER FOR THIS BUILDING WAS HAULED BY OX TEAMS FROM THE REDWOOD FORESTS. THE PORCH POSTS ARE CONTINUOUS FROM GROUND TO ROOF.

ELEVATIONS, VALLEJO ADOBE NEAR PETALUMA, SONOMA COUNTY, CALIFORNIA.

THE BUILDING WAS ORIGINALLY ERECTED AS A GENERAL WAREHOUSE AND FACTORY. IT IS NOW PRESERVED AS A MONUMENT OPEN TO THE PUBLIC AT ALL TIMES. THE BUILDING IS LOCATED ABOUT FOUR MILES EAST OF PETALUMA, SONOMA COUNTY ROAD.

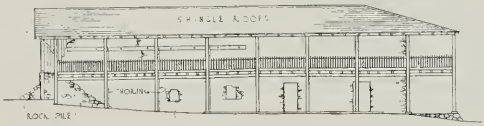


·EAST ELEVATION F
(NEW SHORING WHERE SHOWN)

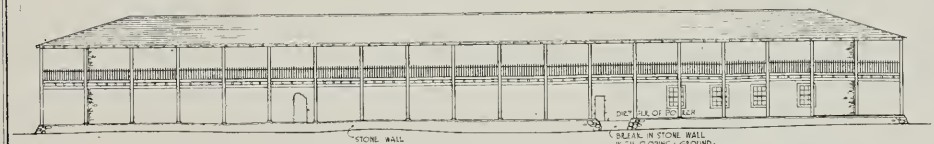


·SOUTH·ELEVATION·G·

EAST·ELEVATION H·



·NORTH·ELEVATION·I·
(NEW SHORING·WHERE SHOWN)



·WEST·ELEVATION·J·

·GEORGE R. KLINKHARDT·DEL

NOTES: FOR VERTICAL DIMENSIONS SEE SHEETS·G AND 8
SEE PLOT PLAN FOR KEY TO DESIGNATION OF ELEVATIONS·

5 0 5 10 15 20 25 30 FEET·
1 0 1 2 3 4 5 6 7 8 9 10 METERS

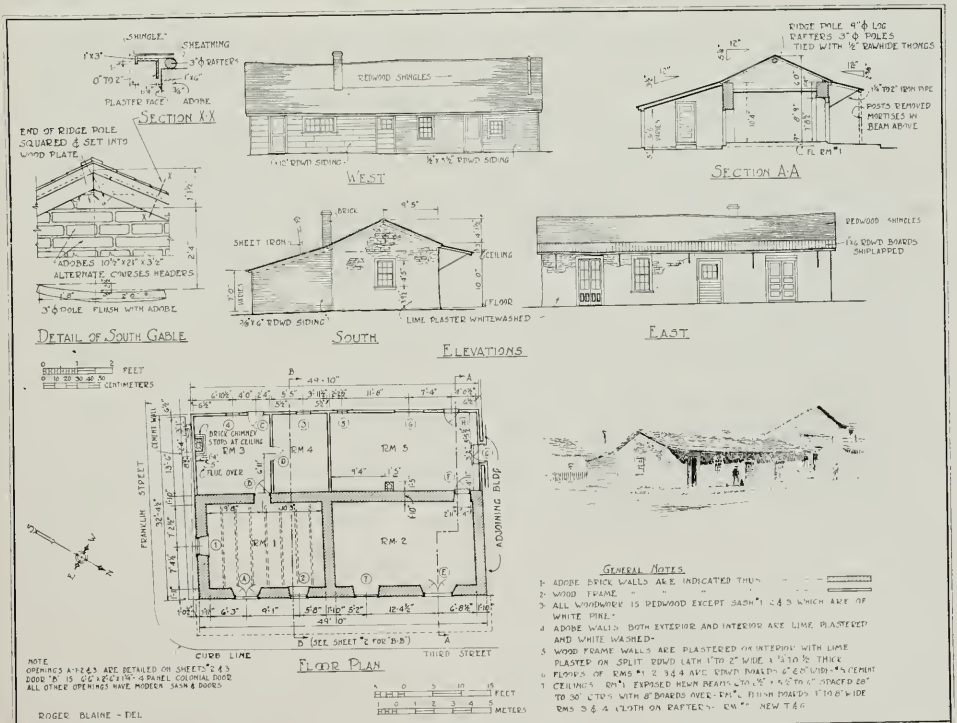
U.S. DEPARTMENT OF THE INTERIOR OFFICE OF NATIONAL PARKS BUILDINGS AND RESERVATIONS BRANCH OF PLANS AND DESIGN	NAME OF STRUCTURE ·VALLEJO ADOBE NEAR PETALUMA·SONOMA COUNTY·CALIFORNIA·	SURVEY NO 38-1	HISTORIC AMERICAN BUILDINGS SURVEY SHEET 5 OF 9 SHEETS	HABS NO.

HOUSE OF MEXICAN PERIOD, THIRD AND FRANKLIN STREETS, SAN JUAN BAUTISTA, SAN BENITO COUNTY, CALIFORNIA.

THIS BUILDING WAS ERECTED PROBABLY BETWEEN 1820 AND 1840 AND IS LOCALLY KNOWN AS THE JUAN DE ANZA HOUSE.

ELEVATION AND PLAN, HOUSE OF MEXICAN PERIOD, SAN JUAN BAUTISTA, SAN BENITO COUNTY, CALIFORNIA.

THE HEAVY ADOBE WALLS CONSTITUTE THE ORIGINAL BUILDING. THE WOOD LEAN-TO AT THE REAR IS A LATER ADDITION OF UNCERTAIN DATE. THE ORIGINAL PORCH POSTS HAVE BEEN REPLACED BY IRON BRACKETS.



SHINGLE
SHEATHING
3"ϕ RAFTERS
PLASTER FACE
ADOBE
SECTION X-X
END OF RIDGE POLE SQUARED & SET INTO WOOD PLATE
ADOBES 10½"x21"x3½"
ALTERNATE COURSES HEADERS
3"ϕ POLE FLUSH WITH ADOBE
DETAIL OF SOUTH GABLE
REDWOOD SHINGLES
1"x12" RDWD SIDING
½"x5½" RDWD SIDING
WEST
RIDGE POLE 9"ϕ LOG
RAFTERS 3"ϕ POLES
TIED WITH ½" RAWHIDE THONGS
1¼" TO 2" IRON PIPE
POSTS REMOVED MORTISES IN BEAM ABOVE
SECTION A-A
BRICK
SHEET IRON
CEILING
FLOOR
⅜"x6" RDWD SIDING
LIME PLASTER WHITEWASHED
SOUTH
REDWOOD SHINGLES
1"x6" RDWD BOARDS SHIPLAPPED
EAST
ELEVATIONS
FEET
CENTIMETERS
BRICK CHIMNEY STOPS AT CEILING
RM 3
RM 4
RM 5
RM 1
RM 2
FLUE OVER
FRANKLIN STREET
ADJOINING BLDG
CURB LINE
THIRD STREET
(SEE SHEET "2 FOR 'B-B')
FLOOR PLAN
NOTE
OPENINGS A-1-2 & 3 ARE DETAILED ON SHEETS "2 & 3
DOOR "B" IS 6'6"x2'6"x1¼"-4 PANEL COLONIAL DOOR
ALL OTHER OPENINGS HAVE MODERN SASH & DOORS
FEET
METERS
ROGER BLAINE - DEL
GENERAL NOTES
1- ADOBE BRICK WALLS ARE INDICATED THUS
2- WOOD FRAME
3- ALL WOODWORK IS REDWOOD EXCEPT SASH #1 2 & 3 WHICH ARE OF WHITE PINE.
4 ADOBE WALLS BOTH EXTERIOR AND INTERIOR ARE LIME PLASTERED AND WHITE WASHED.
5 WOOD FRAME WALLS ARE PLASTERED ON INTERIOR WITH LIME PLASTER ON SPLIT RDWD LATH 1" TO 2" WIDE x ¼" TO ½" THICK
6 FLOORS OF RMS #1 2 3 & 4 ARE RDWD BOARDS 6" & 8" WIDE - #5 CEMENT
7 CEILINGS RM #1 EXPOSED HEWN BEAMS 6" TO 2½" x 5½" TO 6" SPACED 28" TO 30" CTRS WITH 8" BOARDS OVER - RM #2 FLUSH BOARDS 1" TO 8" WIDE RMS 3 & 4 CLOTH ON RAFTERS - RM #5 NEW T&G
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS BUILDINGS AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
NAME OF STRUCTURE
HOUSE OF MEXICAN PERIOD - SAN JUAN BAUTISTA - SAN BENITO COUNTY - CALIFORNIA
SURVEY NO 38-5
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 3 SHEETS
INDEX NO

Photo by Moulin

DETAIL OF ENTRANCE TO BANK, REMODELED GROUND FLOOR OF APARTMENT BUILDING, SAN FRANCISCO

S. HEIMAN, ARCHITECT

Photo by Moulin

GROUND FLOOR OF APARTMENT HOUSE REMODELED FOR ANGLO CALIFORNIA BANK, SAN FRANCISCO
S. Heiman, Architect

Modernization

by Frederick W. Jones

ARCHITECTS who specialize in remodeling will find an increased demand for this class of work as the building industry swings back to normalcy. There are a great many buildings now vacant that need to be revamped before they may be considered tenantable. It is surprising how much can be done to improve an old structure for so little outlay, especially with the advent of moderate priced materials.

A recent example is the new branch bank of the Anglo California National Bank at Chestnut and Fillmore Streets, San Francisco. Here we find the architect and craftsmen have combined their talents to transform an uninteresting ground floor frontage (used for garage space) into attractive and thoroughly modern banking quarters. A thin veneer of terra cotta unit tiles (one and three-quarters inches thick, to be exact) was used over the original concrete surface.

Mottled black with flecks of dark blue-green and Hermosa strips of silver—these tiles are a recent development of Gladding, McBean & Company and produced especially to supply the building industry with a permanent, colorful and economical material for refacing unsightly buildings. Tests of these tiles over a period of time have further demonstrated their resistance to fire and earthquake shock. Anglo California National Bank officials demanded a material that was dignified and suitable to the needs of their institution, as well as permanent in color and the results have been eminently satisfactory.

WHAT MAN COULD NOT BE HAPPY IN A ROOM LIKE THIS?

Contracts

Must Be Specific

A DECISION of importance to architects affecting contracts for professional services, has been handed down by the Supreme Court of California in the case of Louis N. Crawford, architect of Santa Maria, vs. J. E. France, which was appealed by the former from an adverse judgment in the Santa Barbara Superior Court, denying the architect's suit to recover $1963 in fees for preparation of plans and specifications for a hotel which was not erected because the low bid exceeded the amount which the owner was willing to pay.

The architect had a written contract for services but it was silent on the matter of cost of the proposed structure, describing it merely as a "hotel building suitable for the needs of the owner." At the trial of the case the defendant submitted parol, or oral evidence, that there was a verbal agreement the building was not to cost more than $45,000, whereas the low bid received on the plans and specifications was more than $61,000.

This evidence was admitted by the court on the ground that where all the terms of a contract are not incorporated in writing it is proper to show any omitted portion of such an agreement and to clear up ambiguity or uncertainty in the written document. Under instructions from the trial court that if there was an oral agreement stipulating a cost limit the plaintiff could not recover unless he performed his service in this respect, a jury found for the defendant. This finding in the Superior Court was sustained by the Supreme Court.

The legal issues in the case were resolved entirely around the admissibility of oral evidence to clear up the uncertainty as to the nature and character of the building described in the written contract merely as "suitable for the needs of the owner."

The text of the Supreme Court opinion in the case, Crawford vs. France L. A. 14381, written by Justice Ira F. Thompson, follows:

This action was brought by an architect for a fee claimed to be due him under the terms of a written contract for professional services in connection with the construction of a hotel building. Judgment was rendered for the defendant, and the plaintiff has appealed.

More specifically the contract for the plaintiff's services provided:

"(1) That the Architect is to design a hotel building suitable for the needs of the Owner; is to furnish all necessary preliminary sketches and

estimates of cost; is to furnish complete working drawings, specifications and details necessary for the construction of such a hotel building.

"(2) The Architect is to supervise all of the work committed to his control. The Architect is to carry all of the necessary administrative work required in the proper keeping of accounts, the issuance of certificates of payment and such superintendence of the work as is hereinafter mentioned.

"(3) The Architect is to keep an inspector acceptable to the Owner on the work during the pouring of concrete or the erection of masonry construction. The cost of such an inspector is to be paid by the Architect.

"(4) The Owner agrees that the Architect is to be paid for his services, the sum equal to six per cent of the cost of the work exclusive of the cost of the land, in installments as follows: 1/5 of the total fee based upon the estimated cost, on acceptance of preliminary drawings and estimates of cost; on completion of working drawings exclusive of details, a sum sufficient to bring the total payments to 3/5 of the total fee based on the estimated cost or upon the lowest reputable bids for construction; the balance, 2/5, to be in installments as the work progresses."

There was a fifth paragraph which required the owner to pay for surveys and borings and to make prompt statements of his requirements and decisions relating to the conduct of the work.

The plaintiff prepared plans and specifications for a thirty-room hotel which the defendant admits were satisfactory to him. Thereafter bids for its construction were sought and the lowest bid received was something over $61,000. The defendant thereupon abandoned the project because of the excessive cost of construction and refused to pay the plaintiff on theory that he had failed to perform his part of the contract in the preparation of plans suitable to the needs of the defendant. This action was commenced on the written contract for the sum of $1,963.50, three-fifths of the total fee based upon the lowest bid submitted, in accordance with the provisions of paragraph (4) of the contract.

The defendant's answer contained a general denial and, in addition thereto, affirmative allegations of the oral agreement of the plaintiff to prepare plans and specifications for a hotel building which would cost not over $45,000; that the plaintiff failed to design a hotel building "suitable to the needs of the owner," since one of the defendant's known needs was that the cost of construction should not exceed $45,000; and, predicating it upon these same facts, fraud in inducing the defendant to enter into the written contract.

At the trial defendant abandoned the defense of fraud "because proof constituting the elements of fraud was lacking," but the defendant was allowed by the trial court to introduce parol evidence of the prior conversation, conduct, and acts of the parties for the purpose of proving the parol agreement as to the cost of the building. It is the appellant's contention that this evidence was inadmissible except to substantiate the third affirmative defense of fraud, and that, after this defense had been abandoned, it could not properly be considered by either the court or the jury with respect to any of the remaining issues. It is urged as error that the trial court allowed the defendant to add by parol an "entirely new, distinct and independent clause" to the written contract. It is also urged that the defendant's failure to make an affirmative showing and ask for the reformation of the contract on the ground of mistake, precluded the introduction of any evidence in support of the omitted clause of the contract.

The appellant further complains of numerous instructions, refusals to give instructions and changes made by the trial court in instructions offered by the plaintiff, which resulted in the jury's being told that they might find that plaintiff and defendant had orally agreed that the plans and specifications were to be prepared for a building, the cost of construction of which was not to exceed $45,000, and, if they further found that the plaintiff had failed to furnish such plans and specifications, the defendant would not be bound to accept the plans and that unless he did accept or make use of them he would not be liable for the plaintiff's services. One such instruction was as follows: "If you find that the plaintiff agreed to design a building so that the cost thereof should not exceed $45,000, there is the implied agreement that the architect cannot recover unless he performs his contract in this respect, and it is not necessary in order to produce this result that the parties should expressly agree that the architect should receive no pay in the event that he failed to perform this part of the agreement."

(1) The one question to be determined upon this appeal is whether it was proper to permit defendant to show the oral agreement limiting the cost of construction. Its solution depends upon

whether the case can be said to come within one of the recognized exceptions to the parol evidence rule upon which the appellant relies. Although a contract has been reduced to writing by the parties, parol evidence is admissible to show fraud, accident, or mistake, to show the omitted portion of the contract where the writing is incomplete on its face, and to clear up an ambiguity or uncertainty. Ayers v. Southern Pac. R. R. Co., 173 Cal. 74, 81, 159 P. 144, L. R. A. 1917F, 949; and see note 70 A.L.R. 752, collecting cases.

(2) This evidence was offered to complete the written contract by adding a term which was obviously omitted and with which the appellant admittedly had not complied. The written contract was entirely silent as to cost of construction, the only subject which it covered with any degree of thoroughness being the architect's fees and the manner of their payment, which fees, however, could not be determined until the estimated cost was ascertained. "It has long been the rule that, when parties have not incorporated into an instrument all of the terms of their contract, evidence is admissible to prove the existence of a separate oral agreement as to any matter on which the document is silent, and which is not inconsistent with its terms. * * * " Buckner v. Leon & Co., 204 Cal. 225, 227, 267 P. 693. Where it appears upon the face of the writing that it is incomplete, parol evidence may be received for the purpose of supplying the missing matter. "If the writing does not show upon its face that it was intended to express the whole agreement between the parties, parol evidence is admissible to show other conditions or explain latent ambiguities. Kreuzberger v. Wingfield, 96 Cal. 255, 31 P. 109; Sivers v. Sivers, 97 Cal. 521, 32 P. 571; Balfour v. Fresno Canal, etc., Co., 109 Cal. 221, 41 P. 876." Williams v. Ashurst Oil, etc., Co., 144 Cal. 619, 624, 78 P. 28, 30; Stephan v. Lagerqvest, 52 Cal. App. 519, 523, 199 P. 52; Hudson v. Barneson, 41 Cal. App. 633, 183 P. 274.

Despite the greater formality of the contract in that case, we consider that Hudson v. Barneson, supra, is determinative on the question of the completeness of this instrument for the purposes of excluding all oral agreements. The same question was there involved and it arose upon an almost identical set of facts, the contract being evidenced by correspondence between the parties. It was there said, page 636 of 41 Cal. App., 183 P. 274, 275: "Appellants contend that the confirmation of that letter by the defendant bound him to pay to the plaintiffs the agreed percentage upon whatever might be the entire estimated cost of any residence and garage which plaintiffs might plan. Respondent, on the other hand, insists that the amount to be paid plaintiffs could not be determined without a prior determination of the cost of the buildings, and as that cost was nowhere stated in the writings, it was an element of the contract omitted therefrom. In our opinion, the trial court did not err in construing the contract in accordance with respondent's contention. Disregarding the improvident nature of such a contract as appellants' construction would make of the one here involved, it is manifest that the plaintiff's commissions could not be computed from the terms of the written contract alone. This shows its incompleteness. A necessary element of plaintiff's cause of action was the cost of the buildings. Plaintiffs could not object to evidence on the part of defendant as to the amount of such cost upon the ground that the entire contract was included in the writings, while the necessities of their own case compelled them to adopt a like course to supply the same omitted portion of the contract. It cannot be held, therefore, that the letter imports on its face to be a complete expression of the whole agreement."

(3) In addition it is to be noted that there exists an uncertainty upon the face of the contract. In paragraph 1 it is provided that "the Architect is to design a hotel building suitable for the needs of the Owner." Those needs are in no way described in the written contract. Obviously there must have been some discussion and agreement as to the size, type, and style of the building to be planned and erected, and the cost of construction must almost necessarily have been inseparably connected with any discussion of such questions. This is such an uncertainty as may be cleared up by parol evidence as to the nature and character of the building which, within the contemplation and understanding of the parties at the time of the execution of the written contract, would be "suitable for the needs of the Owner." That its cost was a material factor seems to me to admit of no doubt. In Blahnik v. Small Farms Improvement Co., 181 Cal. 379, 184 P. 661, 662, the contract, for the purchase and sale of a piece of realty, provided: "The seller agrees that it will have the roads in said division 'R' constructed during the fall of 1913 after the rains or when the ground is able to be worked. And construct the necessary bridges." The action was

for rescission and recovery of the cash payment for failure of the vendor to construct the roads referred to in the contract. Some bridges and approaches having been constructed before the attempted rescission, the issue was the performance of the vendor. With regard to the exclusion by the trial court of conversations had between the parties before and at the time of the execution of the contract and offered for the purpose of showing the real agreement of the parties in that respect, the court said, page 382 of 181 Cal., 184 P. 661, 662: "This ruling was erroneous. The contract was altogether silent in regard to the character and kind of work that was to be done upon the roads. If there was any agreement on that subject, or any plan relating thereto adopted by defendant and acquiesced in by the plaintiffs, it was not set forth in the contract. So far as appears, it was in parol only. Such an agreement would be collateral and supplemental to the contract contained in the writing, and, as parol evidence thereof would not be inconsistent with the contract and would not alter it in any respect, evidence thereof would be admissible if material to the issues. Silvers v. Sivers, 97 Cal. 521, 32 P. 571; Daly v. Ruddell, 137 Cal. 676, 70 P. 784; 17 Cyc. 741." In Rohan v. Proctor, 61 Cal. App. 447, 214 P. 986, where the lease provided that alterations were to be made before the tenant should enter but did not contain a definite description of what the improvements were to consist or a definite date for their completion, and so was uncertain as to the time when the term was to begin, it was held that this was such an uncertainty as could be cleared up by parol evidence as to the kind and character of alterations and improvements within the understanding and contemplation of the parties at the time of the execution of the contract. However, the complaint therein expressly alleged that the agreement with regard to the nature of the changes to be made in the premises was arrived at subsequent to the execution of the contract. See also, Austin v. Bullion, 77 Cal. App. 257, 246 P. 151; Lewis Publishing Co. v. Henderson, 103 Cal. App. 425, 284 P. 713. We consequently conclude that there was an error in the admission by the trial court of the testimony complained of and that such evidence was relevant to the issue of the appellant's performance.

Appellant's contention that the respondent should have sought affirmative relief through reformation of the contract for mutual mistake is beside the point since it was never urged that the written contract was not in accordance with the real agreement of the parties, but rather that the whole of the agreement was not reduced to writing. The judgment is affirmed.

We concur: WASTE, C. J.; CURTIS, J.; PRESTON, J.; SEAWELL, J.; LANGDON, J.

Termite Problems

by A. A. Brown, C. E.

A CORRESPONDENT writes: "We have read with interest your article on 'Termites and Their Threat to Timber Structures.' We are engaged in the manufacture of windows and doors of Western Ponderosa pine. We believe that in the manufacture of windows the principal worry is not termites, but is decay due to growth of fungi on account of too great a moisture content of the wood.

"We assume that subterranean termites are of little danger to windows or doors because these windows or doors are in almost all cases quite far removed from the ground, and if termites should enter a house the likelihood is that they would attack the joists and studding long before reaching the windows and doors. We, nevertheless, after reading your article, are somewhat fearful that dry-wood termites might be likely to attack windows.

"We would appreciate your opinion on this subject, with any advice you may be able to give us on the subject."

Another letter recently received from a school superintendent is interesting in view of the above inquiry. He writes: "We have a two-story brick building built in 1922 which has an infestation of termites in the woodwork of the basement floor. Window and door casings, moulding set in the plastered walls, and interior door casings have been destroyed by termites.

"We are engaged now in tearing out ravaged window frames, sills, and casings. We do not like to replace new material until we have some method of combating the termites. Can you tell us what to do to eradicate the termites or with what we might treat the woodwork to protect it from further devastation. The termites keep secluded in the walls of the building until we replace new frames to windows and doors, and then the work of destruction begins anew."

* * *

The fact that a large scale manufacturer of wood products is not only aware that termites and decay shorten the use life of his product but is seeking a method for constructively overcoming their destructive action, is an example of the progressive attitude usually associated with large scale industry in America. Any industry continuously seeking ways of improving their product can be expected to be successful. The sash and door industry can be classed as one of those that is highly competitive. The attitude of this manufacturer appears to be "when better sash are made, we will make them" and not slowly succumb to the

aggressive producers of sash manufactured from materials other than wood.

The second letter effectively provides an answer as to the possibility that termites might attack sash. A very common weakness of wood sash has been the softening of the muntin bars due to excess moisture next the glass causing decay of the wood. The possible ravages by termites and damage due to decay can both be effectively overcome by preservative treatment.

For years the Reilly Laboratories, Indianapolis, have studied all phases of wood preservation. Their studies have resulted in a new product, Reilly Transparent Penetrating Creosote. The development of this new preservative is considered a distinct advance in the art of wood preservation. The preservative is a highly refined blended coal-tar creosote oil from which have been removed those substances which impart color and also those which impede penetration into the wood.

Because of the ease with which this material penetrates deeply into the wood, it is possible to adequately preserve window sash, frames, and doors merely by immersing them in the creosote. The treated sash is unchanged in color, it is dry, not oily, and after a short seasoning period it can be painted. The treatment in no way affects the putty-holding properties of the sash. Treatment with the creosote does not alter the dimensions of the wood nor does it affect glue. The preservative can be used to treat sash, window frames, doors, etc., after they have been assembled.

Answering the second inquiry: Only material that has been adequately treated should be used to replace the damaged window frames, sills, casings, etc. If these treated materials are not available, then they should be given an immersion treatment at the building site as outlined above. Pressure treated material should be used in replacing all rough framing.

THEATER LOBBY DOORS, STAINED, THEN SANDBLASTED

Sand blasting

by C. Earl Avery

WHY do architects object to sandblasted glass? Possibly because of the word itself.

"Sandblast" is sibilant, explosive; it suggests crude industrial operations far removed from artistic creations. The action of compressed air and sand on glass is not in the form of a blast; instead, each grain of sand strikes the surface like a hammer. Millions of tiny hammers, each making a diminutive dent in the glass. If the process was correctly named, material subjected to the action of sand and compressed air could be called pounded wood, or sand-hammered metal, or eroded glass — and one objection would be removed.

Sandblasted materials are usually thought of only as decorative materials. A few illustrations of practical applications of glass designed with sandblast will suggest ideas for dozens of other serviceable uses and help to lower the resistance of another objection:

(1) "Tapestry" plate glass, sandblasted with a grille design served the purpose of both glass and the aluminum grilles that were to be placed in front, in the transoms of a large market. The cost of sandblasting was less than that of the metal grilles. (2) Because a burglar had once hidden in the telephone booth of an apartment lobby the wood panel was replaced with one of sandblasted glass,

designed to give privacy to the occupant and at the same time showing his head and feet. (3) A sandblasted design on theatre entrance doors took the place of unsanitary drapes, cleverly broke up a clear view of the lobby from the outside, yet let the glow of the lobby lights through to add to the brilliancy of the exterior. (4) A high and narrow glass ticket booth that originallyy resembled a Chic Sale creation was given the impression of better proportions by sandblasting a properly executed design at the top, bottom and sides of each glass panel.

Some Horrid Examples

Another architectural objection is to the nature of many of the designs, their execution, and the resultant cheapness of their appearance. Horrid examples of school boy art, attempts at "modernism" and other forms of doubtful expression, are perpetrated on the buyer. But, regardless of the production of cheap sandblasted glass, there are many artistic installations that in no way can be compared with the shoddy stuff; nor will the shoddy impair the artistic or intrinsic value of the good.

Theater drinking fountain. Black glass sandblasted with five processes and shaded.

The fault does not always lie with the sandblaster. True, as a maker of designed materials, he should be a master of design. Too often he isn't. Too often his ideas of design are not the architect's ideas. Architects have a habit of "passing the buck" in such matters. Too often the architect gives the sandblaster a thumbnail sketch, scratched on the back of an envelope with a charcoal stub and says, "Here, my good man, take this and interpret a design for the glass work."

Scale drawings, as a remedy, will give the artisan a definite picture. Full-size drawings preclude the possibilities of mistakes.

A glass sample on which a three-process design has been sandblasted, and each step or process sandblasted individually alongside,—much the same idea that a photo-engraver uses in submitting color or break-down proofs of a three-color printing plate,—will help the draftsman to develop his ideas. Then he can indicate on the drawing, by color or by hatchings, where the various processes are to be made.

More Expert Draftsmen Needed

An understanding of the methods used in sandblasting will help in the preparation of specifications. Sandblasting "specs" often are vague; misunderstood by builder, sandblaster and architect alike. A knowledge of these methods helps when price haggling begins. The sandblaster, being human, naturally puts his most experienced help on a job that pays him well. For the price chiselers he is not to be

blamed if he employs cheap, inexperienced labor—art school students for the cutting, pick and shovel artists for the exacting task of the actual sandblasting. An instance is cited of one sandblaster who, working on the theory that all Mexicans have an inborn artistic bent, hired a covey of street loafers of that nationality to do the design cutting on a large and elaborate, though sadly-cut-in-price, job of several hundred glass panels that should have matched perfectly. You can guess the results.

Glass should be clean of surface before the protective coating or sandblast resistant is applied. It will not adhere firmly to a dusty surface. The adhesive compound is applied while warm to glass of near the same temperature (around ninety degrees Fahrenheit), by flowing, or with a brush. Bubbles appear, making thin spots that later result in "burns." They can be eliminated by the application of two thin coats. A few hours' drying between coats, and six to ten hours' drying after the final coat, denotes a well-prepared piece of glass.

Some resistant compounds come in the form of sheets which, moistened, applied and allowed to set for a few minutes are ready for cutting. Quite often their hasty application results in edges blown away from the glass when it is sent to the sandblast room. Hard rubber, metal or wood stencils work well enough on wood but have no place in the scheme of nicely sandblasted glass. Wonders can be worked in the form of imitation hand carving on wood with hard stencils. Unfortunately the design must be a stencil design and, as such, it always looks like—a stencil.

Good examples of "carving" are obtained by coating wood with a compound, sandblasting in the ordinary manner to nearly the required depth, then letting the artistic temperament have full sway; "bearing down" and "burning" the edges of the design with the full force of the sandblast to make rough and "weatherworn" edges. Fine work on wood is done first by covering it with shellac or lacquer, then proceeding in the same manner used on glass.

Stencil Knives Needed to Cut

The properly executed design done on tough tracing paper or a good grade of kraft is pierced with a needle or perforating wheel. Then the rough perforations are smoothed off the reverse side with sand paper. Placed on the surface of the compound with proper allowance at the edges for setting, the design is transferred by means of a pounce bag—a small cloth sack filled with powdered charcoal, chalk or talc—which is tapped lightly over the sur-

Philippine mahogany doors in private dwelling. Light portion is original surface of door. Panels are shellacked, covered with compound and sandblasted . Background stained, leaving design in light relief.

face. Although the compound is as easily cut as cheese, sharp stencil knives are needed to cut sharp, clear lines. Each small rough spot or shred left in a line will show plainly on the finished glass. The knife is held perpendicularly, lightly and firmly; and the lines of the design are followed. If they are followed exactly, by a novice, as they often are, the result will be a stiff, crude line caused by natural deviations made in perforating the drawing. If the knife is held incorrectly, curved lines will be undercut or overcut, making thin spots in the compound and rough, "burned" edges in the finished piece. All lines, all processes, are cut at the same time. But only that part of the compound covering the portion of the design which is to be sandblasted deepest is removed at first. The glass is taken to the sandblast room and the exposed part is sandblasted, (in a three-process design), to about one-third of the required depth. The compound covering the medium depth is then removed and the sandblasting is done to about one-half of its required depth. The first, or deepest cut, still exposed to the sandblast is "hammered" in a little deeper. The same procedure is used for the third or lightest depth; usually called surface sandblast or "frosting." When it is sandblasted the first two processes are cut deeper into the surface. More than three depths are impractical in most commercial work.

Bank counter screens of tapestry (obscure) plate glass, sandblasted with one deep cut.

Variations in texture are obtained by using different grades of sand and different air pressures. Pressures up to 150 pounds to the square inch are used, but seldom for fine work. Between 40 and 60 pounds is enough for sharp, clearly etched outlines. Coarse sand cuts faster than fine sand—and it cuts more crudely, too. Some of the best examples of sandblasted glass are made with air pressures of forty pounds or less, using the dust from previously used sand. Aluminum oxide grits and steel grits are often used for the actual sandblasting in place of dusty, unsanitary sand.

Sandblasting, under ideal conditions, is done in a room equipped with forced ventilation for dust removal. The operator wears a respirator underneath a helmet which is supplied with clean air.

Sandblasting machinery is either of the direct pressure type in which air and sand are mixed in the machine before expulsion through a hose, or the suction type in which sand from a container is inducted to the nozzle of a gun by a partial vacuum formed at the meeting point of air and sand in the gun. Direct pressure systems, faster than suction systems, control air pressure at the machine. Suction systems control it at the nozzle by means of a trigger or valve on the gun.

Specifications to Insure Good Work

Specifications such as the following, if included in the general contract, might help to avoid the common errors and misunder-

standings that sometimes arise between the builder, the architect, the draftsman and the sandblaster:

"Glass used shall be furnished by (glass contractor) (or sandblaster) and shall be (first-class) (salvage) (quarter-inch American plate) (three-sixteenths sheet) glass and is to be installed by (glass contractor) (sandblaster) in first-class condition.

"The work shall be (one) (two) (three) process work.

"Air pressures of not more than (40) (60) (80) pounds shall be used, in conjunction with a sandblast nozzle of not more than (1 16) (⅛) (¼) inch diameter orifice.

(Note: larger nozzles use more air at higher pressures and cover too much area at one time for controlled, fine work.)

"(40) (60) (80) mesh, or screen, sand or metallic grits shall be used for deepest process; .....mesh sand for second process; .....mesh sand for final, or surface, process. *(Note: 40 mesh sand is coarse, 80 is fine.)*

"The glass shall be covered in two coats with a protective resistant compound, applied heated.

"Each piece and each process shall be cut by hand.

"Ragged or chipped outlines will be rejected.

"The work shall be done rom detailed drawings made (or approved) by the architect.

"The deepest process shall be cut into the surface of the glass to a depth of about .....inch. The second or medium process shall be cut in to a depth of about .....inch. The final, or surface process shall be cut to a depth of about .....inch. (Or shall merely obscure the surface of the glass.)

"Glass for sandblasting shall be furnished by this contractor (*if the sandblaster*) and he shall be held responsible for its quality, appearance and installation."

Where Sandblasted Glass is Used

Sandblasted glass is used on commercial buildings in transoms, show windows, valances, counter screens, entrance, elevator and theatre doors, lighting fixtures, signs, partitions, show cases, mirrors, clock dials, side, ceiling and sky lights.

In dwellings it is used on bathroom walls, windows and shower doors, studio windows, light fixtures, table and dresser tops, mirrors, doors, partitions and walls.

Wood is "antiqued" or designed and used on furniture wall panels, mouldings, doors, beams, counters, risers, built-in fixtures, mantles and ceilings.

Cast aluminum and brightly plated metals for signs and lighting fixtures lend themselves well to sandblast and can be further decorated with color or by replating.

Where the process was originally used on marble and granite tombstones to carve "In Memoriams," it now decorates the same materials for modern architecture.

Store front modernized with sandblasted glass entrance doors, transoms, side lights, valences ,and mirrors. Valences and transom lights are further decorated with transparent colors.

THE FORUM, ROME

PHOTO BY DR. EMIL MAYER IN PHOTO ART MONTHLY

Nails

by H. E. Hall, Architect

in Pencil Points

EVERY one knows what a nail is and how it is used, yet there are very few who know exactly what size and style nail to use for a given type of work.

Among architects and draftsmen there exists much misconception as to the real importance of the nail, and through many years of practice I have seldom seen the subject touched on in an architect's "Specification," yet there are whole pages on the grade of sand to be used.

Of the numerous items that ento into the fabrication of a building, particularly the frame, the nail is by far the most important, yet the orchitect or draftsman never attempts to give instruction as to what type should be used: and on being asked why not they invariably reply, "It's a job condition," or, "Let the carpenter worry about it, he knows." And that's where most of the trouble lies, the carpenter does not always know. Then again, nails vary in cost and it may be to the carpenter's advantage to save a few cents, and further, the carpenter does not carry an assortment with him and would be inclined to use what he had to save steps.

In presenting this subject I shall attempt to show in a brief way how to estimate the quantity of nails required for certain work, and give a general rule for the use of nails. Nails are classified by length, weight, and size, this classification being given in "pennies," originating in the old English term "Pence," which in past days referred to the price per hundred nails. Thus a two-penny nail cost two pence per hundred, while the four-penny nail cost four pence per hundred.

Nails starts at two-penny, or one inch in length, and increase by fractions of an inch, thus: three-penny, 1¼"—four-penny, 1½"—five-penny, 1¾"—six-penny, 2"—etc., a twenty-penny being 4" long, up to sixty-penny, the larger sizes being designated by fractions of an inch. This is true of both cut and wire nails.

While the holding power of wood varies greatly, the following figures will tend to give some idea as to the holding power or friction of nails in general, and a comparison of cut and wire nails.

	Pounds required to pull the nail.	
Size	*Cut nail*	*Wire nail*
4d	286	123
6d	383	200
8d	597	227
10d	905	315
20d	1593	703

It will be seen that the cut nail has by far the greater holding power, but, owing

to its great tendency to split the wood, nailing with the wire nail is more frequently desirable.

The following tabulation shows the size, length, and number of nails per pound.

Size	*Length*	*Common nails per pound*	*Casing nails per pound*	*Finishing nails per pound*
2d	1″	876	1010	1351
3d	1¼″	568	635	807
4d	1½″	316	473	584
5d	1¾″	271	406	500
6d	2″	181	236	309
7d	2¼″	161	210	238
8d	2½″	106	145	189
9d	2¾″	96	132	172
10d	3″	69	94	121
12d	3¼″	63		
16d	3½″	49		
20d	4″	31		

Nails are usually packed one hundred pounds per keg.

I have found, through careful study, and by analyyzing a number of operations, that the most practical uses for nails, as regards their sizes, holding power, and tendency to split (where special conditions arise, a slight variance can usually be made), are as follows:

4d finishing. For carpet strips, door stops, window steps, small wood moulding and members ¼″ to ½″ thick.

3d box nails. For siding ¾″ thick.

8d box nails. For siding ⅞″ thick.

8d cut flooring nails. For 13/16″ and ¾″ flooring, hard and soft wood.

4d casing nails. For ⅜″ flooring and finished lumber up to ½″.

8d casing nails. For 1″ outside trim and porch work.

10d casing nails. For door and window frames, and all 1¼″ outside trim.

3d fine. For wood lath. (Should be blued.)

1″ staples. For wire lath for inside tile work.

1¼″ staples. For outside wire lath. (Stucco.) (Should be galvanized.)

3d galvanized. For shingles.

4d galvanized. For shingles.

3d common. (Blued.) For all plaster board.

8d common. For drop siding, bungalow siding, novelty siding, and all rough 1″ lumber.

10d common. For all toe nailing, and 2x4 stud framing.

16d common. For all heavy framing work.

20d common. For spiking girders, plates, sills, etc.

It will be found that there are very few conditions where nails other than those mentioned will be required.

Where salt air is encountered the 6d, 7d and 8d cement-coated common nail should be used for siding, the thicker the siding the longer the nail.

For outside copper and leader work the 1″ fifteen-pound nail (copper) should be used.

The following is an accurate method that I have used for arriving at the total amount of nails of each size and class necessary for an entire job, take the combined total in board feet of the sheathing, sub-flooring and roof boards, multiply this total by thirty-three pounds per thousand (1000) board feet, and we have the number of pounds of 8d common nails required for the job, not including that required for beaded ceiling, or beaded partition which is figured extra.

Multiply the amount in pounds (of 8d common nails) by 0.333 and you have the number of pounds of 10d common nails required.

Using the original figure, we again multiply by 0.900 and get a total in pounds, half of which represents the 16d common

nails required and half the 20d common nails required.

Example:

Sheathing 1650 B.F.
Sub-flooring 1200 B.F.
Roof boards 1000 B.F.

3850 B.F. × 33÷1000 equals 137 pounds 8d common nails required.

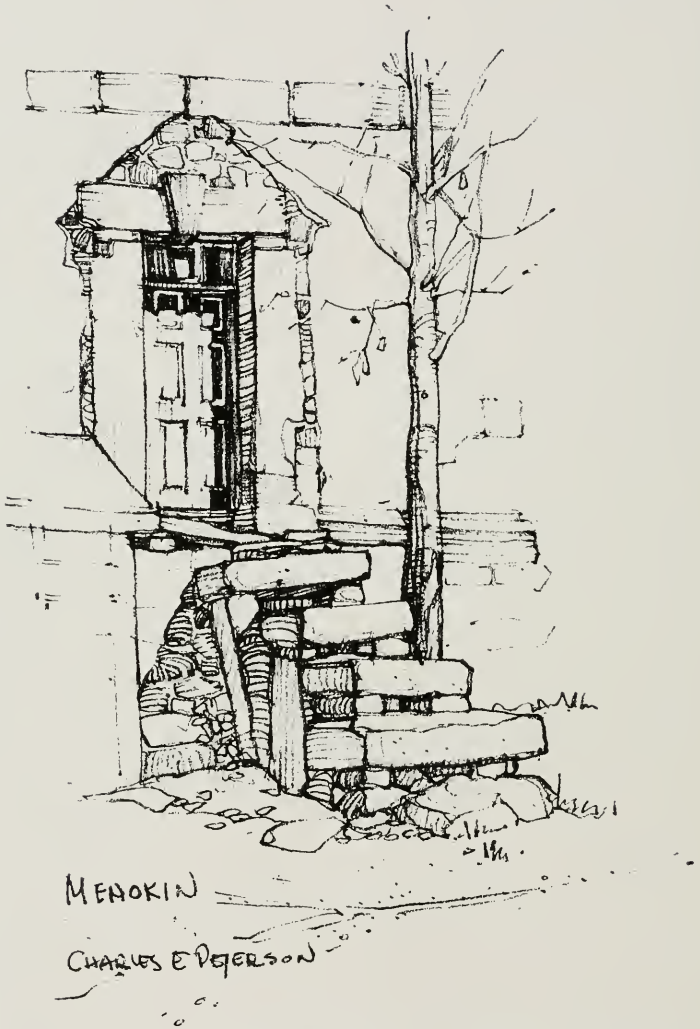
137 × .333 equals 48 pounds of 10d nails required.

137 × .900 equals 123 pounds divided by two, equals 62 pounds of 16d nails—62 pounds of 20d nails.

QUANTITY OF NAILS REQUIRED TO PERFORM VARIOUS CLASSES OF WORK

8 lbs. 3d galvanized nails required for 1000 24" 4/2 shingles
5 lbs. 3d " " " " " 16" 5/2 "
6½ lbs. 3d fine " " " " lath
18 lbs. 6d box " " " " feet beveled siding ½ x 3½
14 lbs. 6d " " " " " " " " ½ x 5½
20 lbs. 8d " " " " " " " "
30 lbs. 8d common " " " " drop siding
30 lbs. 8d cut flooring " " " " D & M flooring
30 lbs. 8d " " " " " " " 13/16 flooring
15 lbs. 8d common " " " " 1 x 2 furring strips
20 lbs. 3d blue " " " " plaster board
16 lbs. 8d casings " " lin. ft. outside mould and trim
4 lbs. 8d finishing " " " " " " inside trim
15 lbs. 6d " " " " " sq. ft. beaded ceiling
25 lbs. 8d common " " " " " " " " partition

If this basis is used thoughout, there should never be a perceptible amount of shortage or surplus on any job figured.



PENCIL SKETCH BY CHAS. E. PETERSON

Subsistence Homesteads

by David Weeks

PREVIOUS to the undertaking in 1931 of the El Dorado County Land Utilization Investigations by the Giannini Foundation and the United States Forest Service, little thought had been given in California to the possibilities of combining the returns from lumbering, mining, agriculture, manufacturing and recreation into a substantial and permanent livelihood for the residents of the foothill areas.

Because of the many phases of the land-use planning problem, even an adequate summary of the results of the El Dorado County Investigations cannot be given here. Probably of greater interest will be a description of a proposed initial step in carrying out the more comprehensive program suggested by the results of the survey. This initial step, arrangements for which are nearing completion, involves the development of a rural industrial area, including subsistence homesteads for part-time industrial workers. The significance of this initial step can better be appreciated, however, if preceded by some attempt at describing the comprehensive plan.

Plan of Land Utilization

Briefly, a program of utilization was drawn up for each of five areas comprising all the lands of the county. This economic classification was based upon detailed analysis of character of the land and a study of costs and returns involved in present and possible uses of the different areas. Conclusions reached on the basis of these facts represent the combined judgment of many individuals.

Among the more important suggestions outlined in the program for the different areas may be mentioned a proposal for Federal acquisition of more than 250,000 acres of privately owned land, 60 per cent of which was in farms in 1931, the gradual zoning of this area for uses such as timber production and grazing not requiring a resident population; the concentration of population in areas adapted to intensive fruit and livestock farming; the fostering of local manufacturing industries where local resources and markets justify such development; the reorganization of fruit farms to more completely supply the food requirements of the family operating it and at the same time introduce cropping methods that will reduce soil erosion; and the reorganization of the livestock farms, in certain localities, on a basis of providing a more adequate supply of supplementary livestock feed, and in others by more economical utilization of mountain range, and by consolidation of livestock farms in larger holdings.

Part of a paper read before the recent Western Conference on Government at the University of California, Berkeley.

Drastic Action Justified

The resources upon which the El Dorado County manufacturing industries have been dependent have been subjected to destruction because their potential value has not been appreciated and because the slow process of depletion has taken place unnoticed.

Costs of government in sparsely populated areas have been excessive. Liberal appropriation for schools without adequate zoning of rural areas have resulted in scattering of schools over extensive areas that should not be populated at all.

The state tax on gasoline provides a fund which too frequently is used to maintain population in areas such as these at a greater cost to the public than would be required to pension these people for life.

They are employed to construct and maintain the roads used primarily by themselves. The same money could be used to employ the same people to construct roads of greater importance. Large areas are thus brought into and kept in agricultural use that are better suited to the production of timber, extensive grazing or some form of recreation.

Through lack of appreciation of the devastating effects of soil erosion, hillsides have been plowed and left unprotected. Many farmers have staked their savings of a life time in the future of a single fruit-farming enterprise and have failed because of the changed outlook for a market which they could not foresee. Irrigation projects financed by bond issues in a period of prosperity have defaulted in the payment of financial obligations.

Face Many Problems

To carry out certain phases of the program will require several years. Others may be realized in a much shorter time. Through the foothill region the populations probably can gradually be concentrated in selected areas by public acquisition of land, giving adequate compensation to, and safeguarding the future of those who are required to give up their present occupation and mode of living; by a more practical system of locating rural schools; by a wiser alocation of road funds; by a careful classification of tax delinquent lands, keeping areas unsuited to private use out of private ownership; by further adjustment of systems of assessments for taxation purposes; by a vigorous educational campaign to encourage farm practices which are consistent with desirable types of utilization and by shaping credit policies toward the attainment of the desired objectives.

In El Dorado County an informed voluntary committee has been established upon which is represented the leaders of the county, from the lumber, fruit, sheep, cattle and mining interests, pledged to guide the county in carrying out its program.

The Proposed Initial Step

A more concrete idea of the significance of the comprehensive program of land utilization for the county can be obtained by considering the different features of the proposed initial step.

At Diamond Springs, California, which is about the center of El Dorado County, there are situated two manufacturing industries. One of these is a lumber mill, which, because of market and financial conditions, has been unable to operate for a period of three years. The other is a lime plant which has continued to operate, but because of code regulations and market conditions employment has been less constant for most of the employees than during previous years. The lumber mill employed more than 300 men when in full operation. If this mill should resume its previous logging schedule it would cut out its present stand of timber in about eight years and leave a permanent gap in the county, and a decadent community.

It is proposed that this mill be reorganized and refinanced on a permanent basis by some form of credit and the consolidation of its timber holdings with other private virgin and cut-over public lands, including a considerable area of submarginal farm lands under Federal ownership or regulation.

A report on several possible plans of financing and reorganization has been prepared by the United States Forest Service, and these plans are under consideration at the present time in Washington.

If the industries of Diamond Springs can be placed on a permanent basis not only is a permanent community sure to result but the values have been created which will serve as security for long term credit needed for some home construction.

Homesteads Planned

Through cooperation of the Civil Works Administration a professional staff has been made available for the planning of a Subsistence Homesteads Project, for the Diamond Springs Industrial area. With the services of this organization it has been possible to make a topographic survey and investigate the probable costs and organization necessary to insure an adequate water supply for the proposed industrial area, to plan and make estimates of cost for a water distribution system within the project, to work out a scheme of subdivision, to plan and estimate costs of building construction and to work out a plan of financing through the Federal Subsistence Homesteads Corporation.

Members of this professional staff of engineers and architects have been placed in various divisions of the University of California and in certain offices of the Federal Government where, through a universal spirit of cooperation, every aid has been given to make the plan a success.

Architectural advice and drawings have been freely given by the Division of Agricultural Engineering, and examination of the soils has been made by the Division of Soil Technology, irrigation studies have been carried on in the Division of Irrigation Investigations, the subdivision plan has been worked out in cooperation with the Division of Landscape Architecture, all in the University of California. The National Park Service and the Federal Bureau of Agricultural Engineering have cooperated in the preparation of relief models and in problems of irrigation organization respectively.

The Housing Problem

The architects employed to work on the house plans were compelled to work within very definite limitations. They were restricted to a maximum value of $3,000 for land, buildings and other improvements, including all labor. They were held to a maximum credit allowance of $2,000. They must provide shelter for automobile, wood, chickens and a cow. In addition the desires of the individual families were to be considered in detail, and the pioneer architecture of the gold rush period was to receive expression. Families having as many as eight children must be given sleeping accommodations. Moreover, the homes must be modern, well ventilated and of durable construction. As a means to this end eighteen families were selected from those expecting to take advantage of the proposed development representing small and large families with low incomes, and small and large families with better incomes. Most of these families have had plans for a future home in their minds for years. Their economic situation, costs, and standards of living, and minimum requirements for sleeping space, constituted the basis for the plans which were drawn up for these specific families.

[Please turn to Page 56]

Photo by S. C. Long Productions

LOOKING ACROSS THE GOLDEN GATE FROM THE OLD FORT POINT-SAN FRANCISCO SIDE, SHOWING MARIN TOWER BEING COMPLETED TO RECEIVE THE CABLE SADDLES IN SEPTEMBER. PYLON G-Q 1 IN THE FOREGROUND.

G. G. Bridge

Ready for Cable Saddles

WORK on the south pier fender of the Golden Gate Bridge is moving ahead at a rapid pace, according to Chief Engineer Joseph B. Strauss.

With 42,372 cubic yards of concrete, weighing over 84,000 tons, poured up to August 1, 18 of the 22 units of the elliptical structure have been completed or are nearing completion, and the steel working trestle has been extended over these. Of the 18 units two have been concreted to their final elevation of 15 feet above water level. Six are concreted to a point 20 feet below water level; eight have been concreted to a point 40 feet below water level and two have been concreted to a point 60 feet below water level.

Concrete has been poured in the base section for the nineteenth unit and the bases for but three more units remain to be placed.

Application of the second field coat of paint on the Marin tower was commenced during the week. This is a bright color so that it will be easily distinguishable from the previous coat. Meanwhile, the erection of the portal enclosure for strut No. 2 of the tower has been commenced by the steel contractors.

During the past month an average of 1100 men were employed on the Golden Gate Bridge job itself and in the shops, mills and other plants throughout the bay district, furnishing material for the bridge.

With borings under way at the site of the low viaduct piers on the Presidio approach road, it is expected that actual construction of the viaduct will commence shortly. A crew of carpenters has been engaged during the week in building forms for the piers and roadway deck of the high viaduct, work on which is proceeding without interruption.

In the eastern shops work on the tower saddles is underway, while in the John A. Reobling Sons plant at Trenton, New Jersey, the work of drawing cable wire is progressing on a fast schedule, with 8,032 tons or 37.4 per cent of the total completed and stored.

The great protective fender of the south pier of the Golden Gate Bridge is now closed, forming a mighty ring of steel and concrete at the bottom of the harbor entrance, 1100 feet off Fort Point. Closing of the fender base marks the accomplishment of one of the most difficult foundation jobs ever attempted by man.

With the final three base units of the fender nearing completion, the steel working trestle now extends over 19 units. Almost 100,000 tons of concrete have been poured on the fender to date and operations are progressing at the rate of 85 cubic yards of concrete per hour, the pouring continuing over a 24-hour period.

SUBSISTENCE HOMESTEADS

[Concluded from Page 53]

In some cases standard plans of the Division of Agricultural Engineering of the University of California were adaptable with little change.

Rehabilitation of Water Project

In order to provide the industries and residents of the industrial area and the Subsistence Homesteads project with an adequate water supply it has been necessary to prepare engineering plans for the rehabilitation and reorganization of the Diamond Ridge Water Company. Because of the persistent demand for a late season water supply many speculative proposals have been made to extend this system far beyond economic limits. The plans set up in connection with the proposed industrial area would involve the carrying out of modest improvements to supply existing needs only.

If the Diamond Springs industrial area project can be carried out successfully it will stand as an example of similar projects that may be planned on a much larger scale elsewhere. It will illustrate how future value of forest conservation and sustained yield operations of lumber industries can be translated into present values and present benefits. It will demonstrate how the utilization of land for forestry and mineral production in one part of the county may be complimentary to a different type of utilization in another part of the county. It will integrate the returns from the use of land for forestry, mineral production and agriculture in such a manner that in the aggregate they will be sufficient to permanently maintain a community. Only upon the basis of such a permanence can a satisfactory social structure be built.

Calculated Lateral Resistance of 45° Diagonal Sheathing

By A. L. Brinckman

THE use of diagonal sheathing in constructing wind and earthquake resistance members in frame buildings is often found to be an economical and practical solution for many bracing problems that occur. The development of constants given below is offered for comment and seems to be a useful form in which to present such material to architects and engineers.

* * *

Conditions and Assumptions

1—In platform framing, when only one side is diagonally sheathed, the only effective sheathing is that which is continuous from mud sill or sole plate to the main sill or top plates next above, as the case may be. If solid boards are not used, butt joints must be staggered two studs apart. At each floor level a ½" break must be provided, along the horizontal center line of the floor joists, to compensate for the possible future vertical shrinkage of the frame.

2—In balloon framing, when only one side is diagonally sheathed, the only effective sheathing is that which is continuous from mud sill or floor level to the floor level next above, as the case may be. Butt joints must be spaced two studs apart.

3—In both types of framing, openings not over three feet in greatest dimension may be considered to be solid wall, as the framing around such openings is sufficiently stiff to transfer forces to the sheathing attached to such framing.

4—In both types of framing, when the walls are diagonally sheathed on both sides, the effective sheathing is that which is not interrupted by openings

over three feet in greatest dimension, regardless of whether the sheathing is continuous from plate to plate or from floor level to floor level, or not. This is because the sheathing must be applied in opposite directions, at right angles, on opposite sides of the wall, and therefore at vertical framing members around openings, a "knee" type brace is formed, which is fully effective for forces in either direction.

5—The nailing, both as to size of nails and frequency per board, is to be the same in the studding as in the horizontal framing.

6—The nails so placed are assumed to be equally effective in the studding and plates whether the boards are in tension or compression.

7—A nail placed anywhere in a board which is inclined at an angle of A to the horizontal has a horizontal resistance of p(cos A) and a vertical resistance of p(sin A) pounds, where p is the holding or shearing power of the nail as given in Sec. 615 of "Appendix A" issued April 10, 1933, by the Department of Public Works, State of California. It is also assumed that the values given in this section include a factor of safety of 4 in redwood and 6 in D.F. or O.P.

8—Vertical reactions are assumed to be resisted by the dead loads above the wall, plus the dead load of the wall itself, and/or any additional "tying-down" necessary, such as bolted-down mud sills.

Notation

b nominal width of sheathing, in inches.
d horizontal component of b.
n number of nails per board at each plate or floor line.
p shearing or holding power of one nail in redwood or D.F. or O.P.
p^1 horizontal component of p.
e increase factor for EQK or wind, @ 4/3.
h horizontal resistance of one board.
S number of boards in length B^1.
H resistance of boards in length B to horizontal forces.
B_1 net length of effective wall for walls sheathed both sides.
B_2 net length of effective wall for walls sheathed both sides.
R_1 factor for walls sheathed one side only.
R_2 factor for walls sheathed both sides.

Development of Formulae

$d=b\ (0.707)$ $h=npe(0.707)$
$S=B^1(12)/d=12(0.707)B^1/b$
$H=Sh=npe(0.707 \times 12(0.707)B^1/b$
$=(8np)B^1/b=R(B^1)$
$p^1=p(0.707)$ $e=4/3$
$R_1=8np\ b$
$R_2=16np\ b$

For any value of n such as nx, multiply R by nx/n.

Example—Wall sheathed one side only, with b=6", nx=3-10d., B^1=14'.
$H=R(nx/n)B^1=235(3/2)14=4935\#$.

VALUES OF CONSTANTS R_1 AND R_2

b	n	p		8np		R_1		R_2	
		8d	10d 12d	8d	10d 12d	8d	10d 12d	8d	10d 12d
4"	2	64#	88#	1024	1408	256	352	512	704
6	2			1024	1408	170	235	340	470
8	3			1536	2112	192	264	384	528
10	4			2048	2816	205	282	410	564
12	5			2560	3520	214	293	428	586

WRITTEN ORDERS OR NO PAY

by Leslie Childs

in Highway Magazine

GENERALLY speaking a highway contract providing that orders for alterations or changes must be in writing means what it says. Perforce the doing of such work by a contractor, in the absence of written orders therefore, may place the contractor in a difficult position in respect to payment.

The application of this rule to a highway contract, and the possible danger to a contractor in overlooking it, is illustrated in a striking manner in the case of Clark County Construction Co. vs. State Highway Commission, 58 S. W. (2d) 388. The facts were somewhat involved, but in so far as is pertinent here, were as follows:

Here the appellant, the construction company, was awarded a contract for the construction of 6.3 miles of highway. Under the caption, "alteration of work," the contract authorized the Commissioner to make changes, but stipulated that orders for same should be in writing. A similar provision appeared under the caption "extra work," and the latter closed with the following:

"No payment will be approved for extra work unless it was ordered, in writing, by the Commissioner."

The contract provided for payment under unit prices. The price for crushed stone was $4.60 per ton, and for rock asphalt $1.40 per square yard, these being the only units involved in the dispute that culminated in this lawsuit. Appellant completed the work and was paid the unit prices. Following this, the appellant brought the instant action for additional payment based upon an allegation of facts recited below:

That the Commissioner altered the specifications of the contract relating to the size of the crushed stone that was to be used in the base course, by requiring a larger size of stone than was originally provided for. That because of this change, it became necessary to spread asphalt to a depth of 3½ inches, instead of 2 inches, as the original specifications called for.

That the cost of this extra asphalt was $1.05 per square yard, making the total cost of asphalt $2.45 per square yard, instead of $1.40 for which appellant was paid; that the appellant spread 63,676 square yards of surface, and was therefore entitled to additional payment at the rate of $1.05 per square yard or a total of $66,860 with interest.

It appears to have been conceded that the orders of the Commissioner for the changes in the specifications were not reduced to writing, as required by the terms of the contract. However, the appellant alleged that the Commisioner did not tender any written notice of the changes, or require any; that the addtional work involved was done under the orders of the engineer in charge, under the directions and order and with the knowledge of the Commissioner.

From the foregoing, the appellant contended the Commissioner should be deemed to have waived the contractual requirement for written orders governing the alterations; in other words, that since the Commissioner had the power to make the contract he had the right to waive the condition as to writing, and that his failure to require writing constituted such a waiver.

On the foregoing state of facts, the trial court sustained a demurrer to the appellant's petition. In other words, that appellant was not entitled to recover thereunder. From this ruling the appellant appealed, and the higher court in passing upon the question raised, and in affirming the judgment of the lower court, reasoned in part as follows:

"Most, if not all jurisdictions, give recognition to the general rule that where a statute directs the manner of making public contracts and specifically prescribes the method of the exercise of the powers of public bodies or officials with respect thereto, such statute is the measure of their authority and any acts beyond the clearly defined limits fixed by the Legislature are void; and where it is required by statute that such contract shall be in writing and the contract itself provides that any modification of its terms shall be in writing, such provisions are mandatory and oral changes and alterations are ineffectual and void. * * *

"Appellant in dealing with the Commissioner of Public Roads was not charged with knowledge of the law and of any and all limitations placed upon his power to make or modify the contract, but the quoted provisions of the contract itself brought notice to it that all modifications, alterations, and changes should be in writing. These provisions are in language so simple, clear and explicit that even a layman by cursory examination would be able to fully understand and appreciate the consequences of a disregard or violation thereof.

"The foregoing rules to which we shall adhere are neither harsh nor inequitable since any one dealing wth public officials or public bodies may avoid their consequences by strict compliance with them. They are grounded in a sound public policy and their abrogation would invite fraud, collusion, and unwarranted expenditure of public funds. * * * Judgment affirmed."

This authority takes the position that, where a contract requires written orders for changes and alterations, the contractor acts at his peril in performing extra work, in the absence of a compliance with the terms of the contract.

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126..00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.

Mosaic Floors—80c per sq. ft.

Duraflex Floor—23c to 30c sq. ft.

Rubber Tile—50c per sq. ft.

Terazzo Floors—45c to 60c per sq. ft.

Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bnkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month, following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.

Medusa "White"	$ 8.50 per bbl.
Forms, Labors average	25.00 per M

Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring—$12.00 to $15.00 per outlet for conduit work (including switches).
Knob and tube average $7.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 75c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

No. 1 common	$35.00 per M
No. 2 common	28.00 per M
Selected O. P. common	37.50 per M
1x4 No. 3 form lumber	20.00 per M
1x4 No. 2 flooring VG	50.00 per M
1x4 No. 3 flooring VG	45.00 per M
1x6 No. 2 flooring VG	50.00 per M
1¼x4 and 6, No. 2 flooring	52.00 per M

Slash grain—

1x4 No. 2 flooring	$40.00 per M
1x4 No. 3 flooring	36.00 per M
No. 1 common run T. & G.	40.00 per M
Lath	5.60 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

13-16x3¼" T & G Maple	$120.00 M ft.
1 1-16x2¼" T & G Maple	132.00 M ft.
⅞x3½ sq. edge Maple	140.00 M ft.

	13-16x2¼" T&G	⅜x2" T&G	5-16x2" Sq.Ed.
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.
Sash weights cast iron, $50.00 ton	
Nails, $3.50 base.	
Sash weights, $45 per ton.	

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (delivered).
Double hung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel, 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work ..... 40c per yard
Cold Water Painting ..... 10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 2oc per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00	lineal foot
8-inch	1.50	lineal foot
10-inch	1.75	lineal foot
12-inch	2.00	lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.60
2 coats, lime mortar hard finish, wood lath	.70
2 coats, hard wall plaster, wood lath	$ .80
3 coats, metal lath and plaster	1.25
Keene cement on metal lath	1.30
Ceilings with ⅜ hot roll channels metal lath	.75
Ceilings with ⅜ hot roll channels metal lath plastered	1.50
Shingle partition ¾ channel lath 1 side	.85
Single partition ¾ channel lath 2 sides 2 inches thick	2.75
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	3.00

Plastering—Exterior — Yard

2 coats cement finish, brick or concrete wall	$1.10
2 coats Atlas cement, brick or concrete wall	1.35
3 coats cement finish No. 18 gauge wire mesh	1.50
3 coats Medusa finish No. 18 gauge wire mesh	2.00

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) ..... .17
2.5-lb. metal lath (galvanized) ..... .20
3.4-lb. metal lath (dipped) ..... .22
3.4-lb. metal lath (galvanized) ..... .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.

Plasterers Wage Scale	$1.25 per hour
Lathers Wage Scale	1.25 per hour
Hod Carriers Wage Scale	1.10 per hour

Composition Stucco—$1.60 to $2.00 sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat, with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), includiug hardware. $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts corner, center and around sides. will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasterers and Hodcarriers (See wage scale under Plastering).	
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

*Established by Special Board

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective In the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

« « « « With the Architects » » » »

WILL DESIGN SCHOOL BUILDINGS

The San Francisco Board of Public Works has commissioned the following architects to prepare plans for new school buildings:

Patrick Henry School—W. D. Peugh & Gardner Dailey, 333 Montgomery Street and Shreve Building, San Francisco.

Sunshine-Buena Vista School—Martin J. Rist; Chas. A. Strothoff & Smith O'Brien, Albert Schroepffer, Phelan Building, San Francisco.

Francis Scott Key School—Wm. Mooser, Edward A. Eames, Douglas D. Stone, Monadnock Building, 353 Sacramento Street and 110 Sutter Street, San Francisco.

CHINESE BOYS' HOME

Plans are being completed by Frederick H. Reimers, architect, 233 Post Street, San Francisco, for a two-story reinforced concrete building for the Chung Mei Home for Chinese boys on a site near San Pablo Avenue and Cutting Boulevard, El Cerrito.

The subscription campaign to finance the structure, is nearing its conclusion. Funds will permit the erection of only one of the two proposed wings at the present time. The cost of the wing to be erected now is placed at $75,000.

MODESTO THEATER

A contract has been awarded for the construction of a $100,000 theater at Modesto for George M. Mann and associates of San Francisco. A feature of the theater, designed by S. Charles Lee, architect of Los Angeles, will be a new type of glass front which is said to have had its origin in Germany.

SAN JOSE ARCHITECT BUSY

New work in the office of William E. Higgins, 19 North Second Street, San Jose, includes a $10,000 auditorium at Newark for the Alpine Swiss Society; a one-story reinforced concrete garage at San Jose for R. M. Cuthbert and a $5000 bungalow on Calaveras Street, San Jose.

STATE HOSPITAL UNITS

Geo. B. McDougall, State Architect, Sacramento, is preparing plans for several units to the new State Hospital at Camarillo. A Federal allotment of $184,000 has been granted.

ARCHITECT HAS CLOSE CALL

David Clark, architect of Palo Alto, had a narrow escape from injury in a train crash at San Jose July 27.

With J. E. McDowell, secretary of the Stanford University Alumni Association and Howard Taylor, member of the engineering faculty of Stanford, the three had halted their machine to permit the Southern Pacific flyer to pass.

A truck driven by A. J. Abren, out of control, crashed into the rear of the car and drove it onto the tracks directly in the path of the flyer.

McDowell snapped his car in gear and jerked it off the track just six inches ahead of the locomotive.

PRINTING PLANTS

H. A. Minton, 525 Market Street, San Francisco, has completed plans for a one-story reinforced concrete addition to the Printers' Building at Broadway and Washington Street, San Francisco.

Will P. Day is preparing plans for a three story reinforced concrete printing plant to be built on Van Ness Avenue, San Francisco, for the Recorder Printing & Publishing Company.

YOSEMITE PARK BUILDING

Bids are to be received by C. J. Thompson, Park Superintendent, National Park Service, Yosemite National Park, until 2 p. m., August 28th, for erecting a two-story reinforced concrete shop building in Yosemite National Park. Plans were prepared by Edward A. Nickell, associate architect, National Park Service, Underwood Building, San Francisco. The cost is estimated at $117,000.

DALY CITY SCHOOLS

Albert F. Roller, architect, Crocker-First National Bank Building, San Francisco, is preparing plans for three new school buildings, costing $35,000 each, to be erected for the Daly City grammar school district, W. J. Sweeney, clerk. Each will have six classrooms and will be of frame construction. The PWA has granted a loan and grant of $105,000 to finance construction. A bond election will be called shortly.

COMPETITION PRIZE WINNERS

In the recent *Pencil Points* flat glass industry architectural competition H. Roy Kelley of Los Angeles was awarded fourth prize. The jury's comments on Mr. Kelley's design follow:

"Here we have a somewhat different type of plan but one which accommodates itself practically to the terms of the program, and also introduces some interesting variations. The living room, dining room, and the two main bedrooms giving on to the garden, are again to be commended. The outdoor lounge, the outdoor dining room, and the terrace are all pleasant features cleverly arranged. In the first floor plan, the entrance hall and stairs may seem a little constricted, but the privacy of the living room has been preserved by the rather circuitous entrance to it. Otherwise, everything is expertly managed for the family comfort. The household equipment and paraphernalia so necessary to the happiness of the devotees of efficiency is arranged in the most shipshape manner.

"This house does not look like a ship, however. It is static and serene, conventional perhaps, but in very good taste, in no sense extreme or bizarre."

Mentions were awarded Frederick E. Emmons, Jr., Los Angeles; Leland F. Fuller, Santa Monica; Charles A. Hunter, Glendale; Wade Pipes, Portland, Oregon; Lloyd Steffgen, Pasadena; and Orrin F. Stone, Pasadena.

CALIFORNIA ARCHITECTS WIN

Three of the five major prizes in the Seventh Annual Small House competition, New York, have been won by California architects. This is a fine showing considering that there were nearly 200 competitors.

In the second class, for buildings of nine rooms, first prize was taken by H. Roy Kelley of Los Angeles. In the first class, for homes of more than nine rooms, second prize was taken by William Wilson Wurster of San Francisco. In class three a special prize was awarded to Richard Neutra of Los Angeles. The remaining two major prizes were won by New York architects.

In addition to these prizes the work of Michael Baltekal-Goodman, instructor in architecture at the University of California, won an honorable mention and will be included in the exhibition and publication of the winning designs.

All of the homes submitted for the contest are already built. Classes one and two were for homes comprising nine to 12 rooms, and class three for experimental modern homes of any size. It was in this last class, in which novelty of ideas and low cost of construction were factors, that Neutra and Goodman placed.

NAMED ON ART COMMISSION

Mayor Rossi of San Francisco has named Edward L. Frick, associated with Arthur Brown, Jr., a member of the Art Commision to succeed Lewis P. Hobart, resigned. The appointment meets with general favor. Mr. Frick is a capable member of the profession and his long association with Mr. Brown has seen the successful fulfillment of some notable commissions, including the San Francisco city hall, opera house, Legion building, and the U. S. Department of Commerce group, Washington, D.C.

John Bakewell Jr., the other architect on the Commission, who resigned with Mr. Hobart to engage in school planning, has completed that work and has been reappointed by the Mayor.

NEW BUILDING INSPECTOR

Erle L. Cope, structural engineer, has been appointed head of the Bureau of Building Inspection, San Francisco. The appointment is subject to confirmation by the Civil Service Commission. Mr. Cope succeeds John B. Leonard, who retired, having reached the age limit.

The new chief of the building department is a past president of the Structural Engineers' Society of California, and is a member of the advisory committee of structural engineers named to assist the State Bureau of Architects upon the new earthquake safety code for school buildings.

John B. Leonard has served the city well since he took over the office, following the death of Mr. Horgan.

BUSY ON SCHOOL WORK

The office of William H. and Harold Weeks, 525 Market Street, San Francisco, has completed plans for a conservatory of music at the Gilroy High School to cost $12,000. The same firm has awarded a contract for a one-story frame addition to the Morgan Hill Grammar School and construction is under way. The firm has been commissioned to prepare plans for structural changes to seven school buildings in Watsonville to comply with the state earthquake law.

BUILDING CODE BOARD

Five men have been appointed by City Manager C. B. Goodwin of San Jose as a board of examiners and appeals under the building code. The men are: Raymond L. Fisher and W. L. Popp, civil engineers; Charles McKenzie, architect; George Kocher, contractor, and Faber L. Johnson, attorney.

$50,000 FOR CLUB HOUSE

The City of Oakland has appropriated $50,000 for a new club house at Glen Park.

PERSONAL

Ellis F. Lawrence, dean of the school of architecture and allied arts, University of Oregon, and member of the firm of Lawrence, Holford & Allyn, architects, has been appointed architect adviser for the state of Oregon by the Home Owners' Loan Corporation.

Richard J. Neutra, internationally known exponent of modernistic architecture, gave an address in the Unitarian Church, Los Angeles, Sunday, July 29 on the modern trend.

Frederick Ashley, formerly of Ashley and Evers, architects of San Francisco, is engaged in work for the Federal government at Washington, D.C.

Lewis P. Hobart has moved his office from the Crocker Building to the Underwood Building, San Francisco.

Paul Thiry, architect specializing in residential and ecclesiastical design who has maintained a studio for several years in the Skinner Building, Seattle, left recently for a sojourn in the Orient. During his absence Lowell V. Casey, 412 Pantages Building, Seattle, will attend to his practice.

Richard H. Eddy, architect of Spokane, was the principal speaker at the June 26 meeting of the Technocracy Club, Chelan, Washington.

Ellsworth Storey, architect of Seattle, is at present employed by the National Park Service in designing housing for camps of the Civilian Conservation Corps.

Stephen Richardson, who recently spent three years studying architecture at the University of Washington, has been awarded a special scholarship, one year's tuition worth $500, by the Massachusetts Institute of Technology. This is one of two such national prizes given by the Boston school. A year ago he was granted a $250 scholarship.

Nario J. Ciampi, 1045 Union Street, San Francisco, has been granted a provisional certificate to practice architecture by the Calfiornia State Board of Architectural Examiners, Northern District.

Powers & Ahnden, architects, have moved to 557 Market Street, San Francisco.

OIL SERVICE STATION

Plans have been completed by H. A. Hall, engineer for Standard Oil Co., 225 Bush Street, San Francisco, for a $7500 class C steel and brick service station to be erected at northwest corner of Durant and Fulton Streets, Berkeley, for Standard Oil Co. of California.

There will be two buildings, of steel and brick construction with tar and gravel roof, steel sash, cement floor and driveway; 6 gasoline tanks.

YACHT CLUB

South Coast Corinthian Yacht Club has leased a site from the City of Santa Monica, on the municipal pier, 1000 feet from shore, where the club proposes constructing a yacht club. Under provisions of the lease, the club must erect a building, plans for which must be approved by the city within one year. Pierpont Davis, 3215 W. 6th Street, Los Angeles, is the architect.

SANTA ANA CITY HALL

The Public Works Administration has allocated $105,000 (loan and grant) to the City of Santa Ana for a new city hall to be erected at Third and Main Streets. The city voted a $70,000 bond issue last December as security for the loan. W. Horace Austin and H. C. Wildman, Spurgin Building, Santa Ana, are the architects.

CIVIC AUDITORIUM

The City of Santa Barbara will hold an election August 28, to vote bonds in the sum of $320,000 as security for a Federal loan, proceeds to be used for financing the construction of a municipal auditorium in Santa Barbara. The Public Works Administration recently allocated $375,000 for the project. Preliminary plans for the structure have been prepared by the Associated Architects of Santa Barbara, 116 East Sola Street.

DISTINGUISHED ENGINEERS DINED

Harrison P. Eddy, president of the American Society of Civil Engineers, and George T. Seabury, secretary, were guests of the San Francisco section of the Society at the Engineers Club, the evening of July 23.

Dinner was served at 6:30 o'clock, after which the members mingled with their distinguished visitors who were en route to New York after attending the Vancouver, B.C., convention.

ARCHITECTS ELECT

Louis N. Crawford, architect of Santa Maria, has been elected president of Santa Barbara Chapter, American Institute of Architects. Mr. Crawford succeeds Winsor Soule, Santa Barbara, who was elected treasurer. Other officers are Keith Lockard, Santa Barbara, vice-president, and Ralph Armitage, Santa Barbara, secretary.

ARCHITECTS CELEBRATE

Celebration of the fiftieth anniversary of the construction of the Tacoma Hotel was the main topic for forensic eloquence at the August meeting of the Washington State Chapter, A. I. A. George Gove officiated as chairman of the celebration committee.

COUNTY COURT HOUSE

Plans are progressing at Oakland for the proposed new six-story and basement court house building at 12th and Oak Streets, that city. Construction is expected to go forward late in October. The final plans are to be submitted to the Supervisors on or about October 15th. The architects for this $1,500,000 structure are W. G. Corlett, W. E. Schirmer, H. A. Minton, Carl Werner and James W. Plachek. G. M. Simonson has been selected as mechanical engineer.

EDWIN J. SYMMES BUSY

Edwin J. Symmes, 215 Haberfelde Building, Bakersfield, is busy on plans for a number of school buildings and additions in Kern County. He has completed drawings for a reinforced concrete structure at Shafter having fourteen classrooms and costing approximately $80,000. He has also finished drawings for a music hall for the Delano Joint Union High School District, and he is at work on plans for several minor school jobs in the vicinity of Bakersfield.

LIBRARY BUILDING

Messrs. Allison & Allison, 1014 Edison Building, Los Angeles are preparing working drawings for a new library building at Ontario for the Chaffey Junior College and High School District. The building will contain a repository for books, reading room with a capacity of 200, high school reading room with a capacity of 100, periodical room, etc. Cost is estimated at $65,000.

CONCRETE OFFICE BUILDING

Allen G. Siple, 450 N. Beverly Drive, Beverly Hills, will revise plans for a one-story office building to be built at 9699 Wilshire Boulevard, Beverly Hills for E. Broox Randall & Son. The building is triangular in shape, 59x72x85 feet and of reinforced concrete construction.

MENLO PARK ESTATE

Plans are being prepared in the office of Noble and Archie T. Newsom, Russ Building, San Francisco, for an early California ranch house on the estate of the Alpine Properties Company in Menlo Park, Santa Clara County. Besides the house, there will be a number of out buildings, including stables, dairy, servants' quarters, etc.

GRASS VALLEY CITY HALL

A two-story and basement reinforced concrete city hall will be built at Grass Valley from plans by Charles F. Dean, California State Life Building, Sacramento. The structural engineer is F. W. Kellberg. Approximately $25,000 will be expended on the improvements.

ALL-ELECTRIC HOME

A twelve-room all-electric home has just been completed at Mansfield, Ohio, by engineers of the Westinghouse Electric and Manufacturing Company. It is equipped with scores upon scores of electrical devices designed for convenience, comfort, health and safety—so many that the electric consumption will run about 18,000 kilowatt hours per year, as compared with an average in P. G. and E. territory of 750 kilowatt hours per home per year. The house contains more than three miles of wire.

In addition to all appliances now in general use, the electric features in this novel residence include: an electrically-heated sun room, an "electric eye" burglar alarm, air-conditioning equipment, an electric clothes drier in the laundry, an electrically-heated compartment in the bathroom to dry towels, infra-red ray lamps over the showers, motor-driven ventilators to draw off odors from the kitchen, doors which open automatically when anyone approaches them, a dining room lighting system with which color combinations can be worked out to match gowns or table decorations.

HALF MOON BAY HOTEL

A $30,000 frame and stucco store and hotel building is under construction at Half Moon Bay for F. Belli. Work is being handled by Charles W. Jackson of San Mateo. Besides eight rooms, there will be four two-room apartments, two stores, dining room, bar, etc.

THIRTY UNIT SCHOOL BUILDING

Carleton M. Winslow, Architects Building, Los Angeles, has been commissioned to prepare plans for a 30-unit addition to the Miramonte School, on 68th Street, Los Angeles. John and Donald B. Parkinson will design an 18-unit addition to the Lafayette Junior High School, Los Angeles.

VALLEJO AND PITTSBURG THEATERS

Construction has started on extensive alterations to the Fox-Virginia Theater at Vallejo and for a new playhouse at Pittsburg, Contra Costa County, from plans by F. Frederic Amandes, 1879 18th Avenue, San Francisco.

WOODSIDE RANCH HOUSE

A California type ranch house is being erected at Woodside, San Mateo County, on the Roy N. Bishop Estate. W. W. Wurster, 260 California Street, San Francisco, is the architect.

HIGH SCHOOL ADDITION

At Healdsburg, Sonoma County, a $60,000 reinforced concrete addition is planned to the high school. The drawings are being prepared by John I. Easterly, 302 Grand Ave., Healdsburg.

Chapter and Club Meetings

NORTHERN CALIFORNIA CHAPTER

The regular monthly meeting of Northern California Chapter, A.I.A., was held at Marquard's, San Francisco, Tuesday, May 29. President Albert J. Evers presiding.

Chester H. Miller, delegate, rendered an interesting account of the 66th A.I.A. convention, held in Washington, D.C., May 16-18. The principal actions of the convention were briefly enumerated. Of chief interest was his announcement of the election to Fellowship of two members of Northern California Chapter, Albert J. Evers and F. H. Meyer. It was pleasing to learn, further, that by action of the convention John Henry Nash of San Francisco had been elected to Honorary Membership in the Institute.

Progress in the organization of the Construction League of California was outlined by Mr. Evers.

The Chapter was informed of the action of the Board of Directors in suggesting to the Central California Contractors Association of the Associated General Contractors ways for bettering the building industry. Care in the selection of subcontractors and close inspection of their work were cited as responsibilities which should be assumed by the general contractor.

Mr. Roeth spoke on the scope and policy of the SERA.

Candidates were selected for the consideration of Mayor Rossi in making appointments to fill two vacancies in the Art Commission as follows: John Reid, Jr., Eldridge T. Spencer, Earle B. Bertz, Wm. I. Garren, Alfred Henry Jacobs, J. Francis Ward, Edward L. Frick.

The resolution of Mr. Roeth, seconded by Mr. Morrow, was passed as follows:

"Resolved, That the sense of the meeting be placed on record to advocate that public and private clients consider the Bay District as one area in the selection of architects, and that such selection be based on the qualification of ability to perform the work."

The recommendation of the San Francisco Chamber of Commerce to Mayor Rossi for the establishing of a Public Housing Authority was announced by Mr. Garren.

The action of the Board of Directors in requesting Mayor Rossi to take steps to procure San Francisco Development drawings for exhibit and future reference was announced.—J.H.M.

SOUTHERN CALIFORNIA CHAPTER

Substituting a round-table discussion for committee reports, Southern California Chapter, American Institute of Architects, held its regular monthly meeting at the Flintridge Riding Club in Pasadena, July 10.

Dinner was served out of doors, following which Reginald D. Johnson showed several slow motion pictures of horse events at the Tenth Olympiad held in Los Angeles in 1932. The remainder of the evening was devoted to bridge and political discussions.

The following members attended the meeting: Reginald D. Johnson, Ralph C. Flewelling, E. F. Bissantz, Joseph Kaiser, Frank A. Vigers, Leland Fuller, Heth Wharton, Henry Carlton Newton, Donald Beach Kirby, Samuel Lunden, Eugene Weston, Jr., Sumner Spaulding, Elmer Grey, S. B. Marston, Herbert Powell, Harold Wildman, Earl Heitschmidt and Kemper Nomland.

STATE ASSOCIATIONS

The State Association of California Architects held a dinner meeting at the Rosslyn Hotel, Los Angeles, August 8, for the purpose of discussing a proposal now before the Los Angeles city council to consolidate the Los Angeles Building and Safety Commission and other city commissions. Speakers on the program, and their subjects, were as follows:

Robert H. Orr, former member of the Building and Safety Commission, a general statement about the work of the commission during his term of office.

Wm. H. Menn, president of the commission, "Is this in the interest of economy?"

Wm. Simpson, past president of the Los Angeles Chamber of Commerce, "Is the board necessary in its present form?"

N. E. Dawson, of the Soule Steel Co., "Should the city charter be amended, and if so, how?"

F. J. Connolly, manager of the Southern California Chapter, Associated General Contractors, "The general reaction of the building industry to this proposal."

C. J. Derrick, "The engineers' point of view."

Sumner Spaulding, president of the Southern California Chapter, The American Institute of Architects, "The effect on the architect."

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SPECIALIZED EXPLORERS

Interesting views on the exploration field were expressed by Roy Chapman Andrews, leader of the Asiatic, Gobi Desert and Borden Alaska Expeditions of the American Museum of Natural History, in his address at the First Choosing-a-Career Conference for college men and women, held by L. Bamberger & Co., in Newark, N. J., on June 26th, 27th and 28th. Thousands of college students from virtually every state in the union attended the conference.

Dr. Andrews' comments in part will be found most interesting:

"If you are going to try to come into Natural History work, into any museum, or go into exploring, specialize. Come in and say, 'I am a zoologist, I am a paleontologist. If you want me to join this expedition, I can go as a topographer, I can go as a radio expert, I can go as a motor expert,' and if you come to a man who is organizing an expedition with qualifications of that sort, you can be considered. But if you just come to him and say, 'I am a good camp man and I am a good shot and I am not frightened of natives or bandits,' that just does not mean anything, because we can hire out in the field, natives to do the work so much cheaper and so much better than white men that we always take natives.

"I had forty men on my last expedition; fifteen of them were foreigners, and every one of them was a specialist. Every other man on the expedition was a native. So come to a man who is organizing an expedition, as a specialist and don't worry about it. Don't write to him if you aren't a specialist.

"There are one or two cases, such as Dick Byrd's Expedition, today, where he doesn't need other than specialists, but those cases are very rare, and there will be very few expeditions of that sort later.

"Another thing: Don't ever expect to make a lot of money out of either Natural History or Exploration, because you will be disappointed. If you go with that idea, you had better stay out of it. You can make a living and you may make a good living if you have other qualities—if you can lecture, if you can write well, if you can give radio talks. Those are the prerequisites; if you are able to do them, they will help out your living. But if you go into a museum, the salaries are never great and never will be.

"If you have a private income, it helps a lot, because then you can afford to work for a smaller salary, if you are not entirely dependent upon your income, and it makes your whole life easier. But if you have no private income, don't expect, ever, that you are going to make a lot of money out of it.

"As I have said, one message I want to leave with you today is, don't go in or attempt to train yourself for Natural History or Exploration unless you simply can't be happy doing anything else.

"I was at a dinner the other night with a group of men and we were looking back over our lives and wondering what we would have been, what we would have liked to be if we could live our lives over, and searching my life with the greatest care, I found out that there was nothing in the world that I would rather have done, or rather be doing, but I am a specialized case. I was a born naturalist, a born explorer; I wasn't made.

"The great artists have been born artists; they haven't been made, and you will get very little money but you will get out of it something that money can't buy, and that is the sort of happiness that I have had during these years of life."

* * *

Mr. Andrews was asked for a reply to Mr. Barton, one of the speakers who preceded him and who said that he found more contentment in a group of Chinese rivermen than he did in a group of New York brokers. Do you agree with him, thinking that people are happier in primitive countries than they are in the more civilized countries?

Mr. Andrews: I think so, yes. Their needs aren't so great; their wants aren't so great, therefore, they don't have to strive so hard to satisfy them.

Question: What do you think of women going into exploring?

Mr. Andrews: I had intended to talk about that today, but I didn't because it is a question which will probably get me into very, very bad odor with the women, but I don't believe in women in exploration unless they go off on their own jobs. I take this point of view: I have had 3000 applications from women to join my expeditions, and I say, if a woman can do a job in exploration better than a man, then there is some excuse for taking her, but if she can't do a job any better than a man (I don't know any job that they can do better than men in exploration) then there is no reason to handicap yourself by a woman who admittedly has disadvantages."

BUILDING COSTS DROP 8⅓%

Although the general building cost is 28 percent higher than a year ago, there has been a drop of 8⅓ percent since the first of this year. Also costs at present are appreciably lower than in 1932 and 28.8 percent below 1929 figures, ac-

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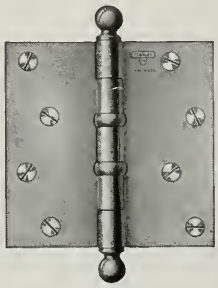

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cording to a composite index prepared by the Dow Service.

"To be sure, building costs have increased like nearly everything else from the all-time lows of a year ago," writes Myron L. Matthews in the current Dow Service Building Reports: "but when current prices and wages paid on actual construction projects are compared with cost for other periods, the index shows:

BUILDING COSTS

March, 1934	71.5;	1930	99.3
October, 1933	66.8;	1929	100.3
July, 1933	55.0;	1928	99.4
1932	72.0;	1927	99.5
1931	84.0;	1926	100.0

Continuing his analysis, Mr. Matthews says: "The lowest index being 55 for July 1933, and the 1929 figure being 100.3, a range of 45.3 points, exact attainment of half return to 1929 building cost would place the index at 77.65, whereas it stands at the March figure of 71.5, with no indication that it will go higher for the present. There is supporting evidence in many quarters to the belief that there will be a further slight recession, though not enough to encourage prospective builders to await a better market.

"It is considered unlikely that the market will for years to come be more attractive than it is at the present."

NEW CLIENTS FROM OLD HOUSES

By ALEXANDER CARL GUTH, A.I.A.
in The Octagon

This will not pertain to those characters of our great centers who awaken us in the early morning with their calls "old clothes for sale." It will concern itself with the part any architect can play in the changing hands of another type of old clothes, namely — old houses, the clothes of an entire family.

During these waning months of the great depression and the busy years of the so to be termed "post depression period" which will follow, many an old house or homestead will change owners. So the following question seems to the point. Does the fact ever cross the minds of the rank and file of architects what an important part they might and should play in these transactions — that an architect can here do something of real benefit to all concerned and likewise put some additional shekels in his depleted coffers? Listen to a real old clothes story taken from life. Once upon a time, as all good stories start, a close friend of a certain architect became enthused over a charming house. (It was only good to look at.) The house in question had had many tenants in a very short time. This prompted the friends of the prospective buyer to warn him to go easy lest some-

thing might be radically wrong with the house.

Unmindful and unheedful he dashed right in and purchased it in short order. And did he get "stung"? That is not the word to use. During the lapse of the last two years this house has been hoisted up in the air and now it rests on a steel framework of columns and girders. It's a frame house, at that, with a brick basement. And all this because the house had been built directly over a swamp. New pier footings had to be placed nine feet below the basement floor. Now, true friend architect, had he been consulted, would not have been able to sense that swamp. It was buried too deep. But had he been called in during the time the transaction was in the making, and had he made only a casual survey of the premises, his trained eyes would no doubt have detected something radically wrong. Uneven floors, sticking doors, and out of plumb jambs are warning signals. This is no place, however, to moralize on the story. It would be if the pages of this publication were read more generally by the general public. Few laymen relatively speaking, see it. But this is the time and the place to tell the architect that he can be of material service to the "buyer of old clothes". Apparently this sphere of activity on the part of the architect has been entirely overlooked. There is no doubt that there are other so-called "swamp houses" of which prospective owners should be made wary.

The average citizen is loath enough to come to an architect with a new building project. Education is gradually wearing down this feeling. And so, also, must be worn down the attitude that an architect can not be of material assistance to a prospective buyer when he is about to purchase "old clothes". The professional service of the experienced architect should be called upon freely by the layman. When purchasing anything as important as a home the prospective home owner would be the material gainer if he pursued this method. As a rule he makes no bones about asking his architect friend innumerable questions every time he has a chance. He buttonholes him every now and then about what may appear to him as trivial problems. Yet they are matters of real stock in trade to the architect, who has gathered them not for the purpose of hoarding them but to put them to use. They are income producing facts but the architect of today is not quite ready to admit that or if he does do so he has failed to grasp the full meaning of their value.

Has any member of the profession ever stopped and figured out the amount of free advice which an architect is called upon to furnish? His counsel and advice are for the asking, and he seems almost keen on dishing it out promiscuously. Compare the loose tongue of the architect with that of

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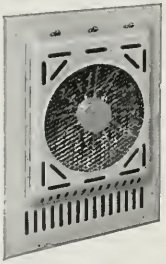

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his fellow professional men—the lawyer and the doctor. Many a family doctor makes the rounds of his daily calls in a high grade motor car, and is materially compensated by the fees for the many brief visits which he makes daily. A bit of advice concerning your last stomach ache and there's a bill! But the architect, great philanthropist that he is, dispenses his free advice right and left. Roof and leaky wall conditions, window or door hardware that needs replacement, the proper color for the new coat of wall paint are all the items calling for free advice in a day's program. The ability to solve these small problems correctly was gained in the hard school of personal experience, at large expense of time and money. Yet the answers are to be had for the asking!

And what should be done about it? The answer is not to be found in Kidder, or Trautwine, or Vignola. It is, simply, that the architect must use a little common sense, and be more discriminating in donating his stock in trade to others.

So, when casual acquaintance, friend, uncle, or Cousin Kate consult you about that door which they would like to move, about that new type of wall paper for the living room, or that water softener, or the new heater, give all the advice that is necessary for a practical solution of the vexatious matter (if it be such) and then don't be chicken hearted—*send a bill for professional services rendered.*

GAS ENGINEERS' HANDBOOK

The "Gas Engineers' Handbook," containing thorough technical data on all phases of fuel utilization, including heating, has recently been published by the McGraw-Hill Book Co., Inc., New York.

The book is a comprehensive and authoritative reference manual, bringing together in one volume the physical, chemical, thermodynamic, and other constants and formulas used most frequently by the gas engineer in his work. All phases of the subject are covered, including fundamental mathematics, properties of materials, liquids and gases, heat and combustion, testing and measurement, transmission and distribution, and utilization, both industrial and domestic.

Prepared by the Gas Engineers' Handbook Committee of the Pacific Coast Gas Association, the book was edited by S. H. Graf, Director of Engineering Research, Oregon State College, Corvallis, and reviewed by a special engineers' committee of the American Gas Association.

Copies of the volume ($7.50 each) may be ordered from the publisher or from the Gas Engineers' Handbook Committee of the Pacific Coast Gas Association, Clifford Johnstone, Secretary. 447 Sutter St., San Francisco.

SPECIFICATIONS OF NON-FEDERAL P.W.A. PROJECTS

The Herman Nelson Corporation has called to our attention a serious and widespread misunderstanding among architects concerning the way in which specifications should be written for P.W.A. non-Federal projects such as schools, hospitals, housing, etc. Many architects appear to believe that they must on this class of work follow the same government specifications as for Federal work and even more believe that it is forbidden to mention materials and equipment by brand or trade name. It is important for these architects to realize that on non-Federal projects which have received grants or loans from the P.W.A., they may adhere to local practice and write their specifications in accordance therewith.

The Administration at Washington has stated that P.W.A. State Engineers are instructed to approve plans as regards their compliance with the original basis for the allocation of funds—not as to specific details of materials and construction but as to general compliance. After such approval, it is the duty of the Department of Inspection of the P.W.A. to see to it that these plans and specifications are complied with and that any materials or equipment furnished under the approved plans and specifications are in keeping with their direct intent and meaning. There is nothing in the regulations to prohibit the approval of specifications calling for the use of local materials and products or otherwise in conflict with the local practices of architects.—*Pencil Points.*

FORDERER CORNICE WORKS EXPANDS

The Forderer Cornice Works has opened a Southern California office and warehouse at 539 South Clarence Street, Los Angeles. A complete line of construction specialties has been added to the well known Forderer products, all of which are now carried in stock in Los Angeles. H. J. Krueper, formerly in charge of Barnes Corning Company in Los Angeles, has been appointed the Forderer representative in Southern California.

GARAGE ALTERATIONS

Extensive alterations are to be made to the garage at 17th, Kansas and Rhode Island Streets, San Francisco, for the Pacific Greyhound Lines. A contract for the work has been let to G. P. W. Jensen, 320 Market Street, San Francisco, for approximately $50,000. Miller & Pflueger are the architects.

BREWERY ADDITION

Joseph H. Wohleb, Olympia, Washington, has been retained to prepare plans for an addition to the Century Brewery Company's plant at Seattle. He prepared the plans for the main unit a year ago.

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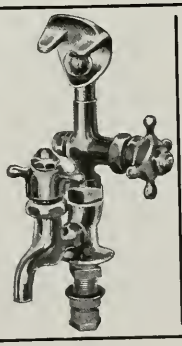

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BRIDGES BEAUTIFUL

The three most beautiful bridges of steel built last year are the Cedar Street Bridge over the Illinois River at Peoria, Illinois; the Shark River Bridge between Belmar and Avon, New Jersey; and the "Dr. John D. McLoughlin Bridge" at Portland, Oregon. These bridges were selected by a jury of nationally known architects and engineers to receive the sixth annual award of the American Institute of Steel Construction. They will be decorated with stainless steel plaques at unveiling ceremonies to be planned later.

The Cedar Street Bridge at Peoria was judged the most beautiful in Class A, which included bridges costing more than a million dollars. The South Tenth Street Bridge, over the Monongahela River at Pittsburgh, was given honorable mention in this same class.

The Shark River Bridge on the Jersey shore was judged the most beautiful among bridges of medium size, costing less than a million and more than a quarter million dollars. The Shrewsbury River Bridge at Seabright, New Jersey, was given honorable mention in the same class.

The "Dr. John D. McLoughlin Bridge" over the Clackamas River at Portland, Oregon, was selected as the most beautiful of the small bridges. The Port Clinton Bridge over the Portage River at Port Clinton, Ohio, was granted honorable mention.

"THE LITTLE HOUSE"

"The Little Gray Home in the West" is to have its modern counterpart in "The Little House in the East," according to Mrs. E. S. Unger, chairman of the committee of Better Homes in America for the City and County Federation of Women's Clubs.

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kindly hospitality and usefulness, so this actual little house in New York city is to stand for all that is best in modern home equipment.

Ground was broken for it a few days ago, when the city of New York's Mayor La Guardia participated in a broadcast ceremony. The house will stand at Thirty-ninth Street and Park Avenue, will be planned for an average family of four, without a maid, and will be designed as the finest expression of the home - building art which can be made by the home owner of modest income.

There is to be a large modern nursery, scientifically planned for the health and safety of the 1934 child. There will be a model kitchen with the newest of labor saving devices, and a utility room provided with machines to do work such as washing, ironing, vegetable peeling and food mixing.

The house will combine the expression of aims of 9000 Better Homes committees in the United States, most of these sponsored by federated clubs and will be the work of two nationally known architects, Roger H. Bullard, who won the gold medal in the Better Homes small house architectural competition for 1933, and Clifford Wendehack, who, with the late Donn Barber, built the first National Better Homes demonstration house in Washington, D.C., some years ago.

Mrs. William Brown Melony is chairman of the committee in charge of the Little House, and associated with her will be Mrs. Robert G. Mead, nationally known for philanthropic and educational work; Dr. Lillian Gilbreth of the American Society of Mechanical Engineers and an authority on motion study; Dr. Mary Swartz Rose, professor of nutrition at Columbia University and an authority on dietetics; Mrs. Emily Post, etiquette authority, and Dr. S. J. Crumbine, general director of the American Child Health Association.

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"Standing as it will at one of the great crossroads of the world," said Mrs. Unger, "the Little House will be inspected and criticized by experts in every field relating to the home. Many projects of interest to all home owners will originate there, and all these activities will be linked to our own work in the clubs. It is the hope of the national committee that the achievements of the outstanding authorities who have planned each detail of the Little House will be duplicated in many of the 7000 communities in which Better Homes work is carried on."

WATER LEVELS

Earl Lee Kelly, California State Director of Public Works, announces the release by State Engineer Edward Hyatt of Bulletin No. 39-B issued by the Division of Water Resources. This is a mimeographed report giving the records of water levels at a large number of wells in the South Coastal Basin for the calendar year 1933 and also precipitation records for the seasonal year 1932-33 in the same area.

Bulletin 39-B is the second supplement to printed Bulletin No. 39 which summarized all records of similar nature prior to the time of its issuance early in 1932. The bulletin contains 144 pages of data, and may be obtained through the Supervisor of Documents, Bureau of State Printing, Sacramento.

STAINLESS STEEL

The Republic Steel Corporation, Youngstown, Ohio, has recently issued a booklet on their new product — Enduro 18-8 Stainless Steel—of general interest to architects and contractors.

The brochure contains 16 pages of reading matter and illustrations. A complete analysis, chemical and physical, is also presented.

In addressing communications regarding this product and its descriptive matter refer to Bulletin No. 125.

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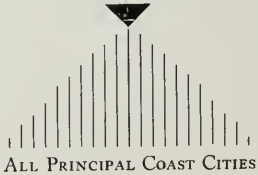

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LUMBER'S TUMBLE

Effective July 20, the housing and building materials consumer has received the benefit of reductions of between 14 and 15 percent in all lumber products, the result of cooperation between the retail lumber industry, the lumber and timber industry, and the National Recovery Administration in support of the Administration's general housing program.

Prices on some 60,000 items produced by about 32,000 units in the lumber and timber products industry have been lowered, primarily to permit the potential consumer of low-cost housing units to buy more of the industry's products. For example, the price of Southern pine has dropped from late 1929 and early 1930 levels to those of mid-1930, while prices of Douglas fir, previously at 1929 peak levels, have descended to late 1930 levels. These two classes constitute about two-thirds of the industry's output.

This approximately 15 percent drop in retail and produce prices was brought about as result of action taken in connection with the Retail Lumber Code and the Code for the lumber and timber products industry. Reductions in the retail price to ultimate consumers of lumber of from 4½ to 8½ percent were effected June 28, under an order by the Administrator revising the so-called modal markup established in the Retail Lumber Code. Provisions in the Code provided for this administrative action, and approximately 23,000 retail lumber dealers were affected. The modal mark-up is the percentage which the retail lumber dealer must add to his invoice cost for expenses of administration, handling, and storage, when he sells to the consumer. Under the NRA ruling the percentage allowed was dropped from about 42 percent of cost to about 30 percent, or an average of 5 percent off the sales prices.

Subsequently, on July 16, the Recovery Administrator, having

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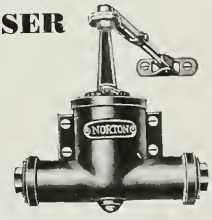

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approved an amendment to the Lumber and Timber Products Code authorinzing this action, simultaneously determined that an emergency exists in the lumber and timber products industry, "threatening to render ineffective and to seriously endanger the maintenance of the purposes and provisions of the Code and the Industrial Recovery Act." To cope with the emergency the Administrator ordered that certain price classifications be established.

In working out these classifications, the Division of Planning and Research, which is charged by the order to make a full study of the operation of the costs and the flexible rules and regulations imposed by the order, analyzed actual material bills to determine the cost of an average house, and thereby computed that the new prices revealed a drop of from 8 to 10 percent. In transmitting the order to the Administrator it was pointed out that "this reduction in prices represents the lumber and timber products industries' contribution toward lower construction costs."

PARIS PRIZE WINNER

This year's Paris Prize, the 27th, was won by M. W. Kleinman of New York University, a pupil of Lloyd Morgan. R. Ayers of Yale, pupil of Frederic C. Hirons, placed second and L. W. Smith of Princeton, pupil of Jean Labatut, placed third.

ARCHITECTS MOVE

George M. Lindsey has moved his offices from 1010 W. Sixth Street to 6305 Yucca Street, Hollywood.

Victor E. Siebert, architect, and Vern D. Hedden, engineer, have moved to larger quarters from 420 Security Building, Long Beach, to 122 E. Third Street, Long Beach.

Howard H. Clayton in association with J. C. Kistner Co. of Los Angeles, has opened an office for the practice of architecture at 415 Haberfeldt Building, Bakersfield.

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THE ARCHITECT AND ENGINEER

SEPTEMBER 1934

...This Month...

OAKLAND TWO YEARS AHEAD IN REMODELING PROGRAM

■ ■ ■

ARCHITECTS DESIGN OLD BUILDINGS TO LOOK LIKE NEW

■ ■ ■

BUILDING LOANS AND HOW TO OBTAIN THEM

■ ■ ■

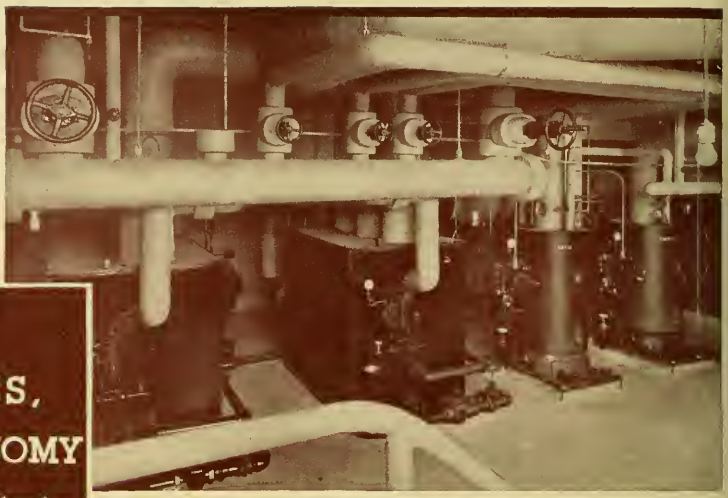
ANOTHER INSTALLMENT OF WORK OF HISTORIC AMERICAN BUILDINGS SURVEY

■ ■ ■

FAILURE OF REDWOOD BOX DRAIN AT ISLAIS CREEK, SAN FRANCISCO

■ ■ ■

MORTAR PROPERTIES AS RELATED TO STRENGTH OF BRICKWORK



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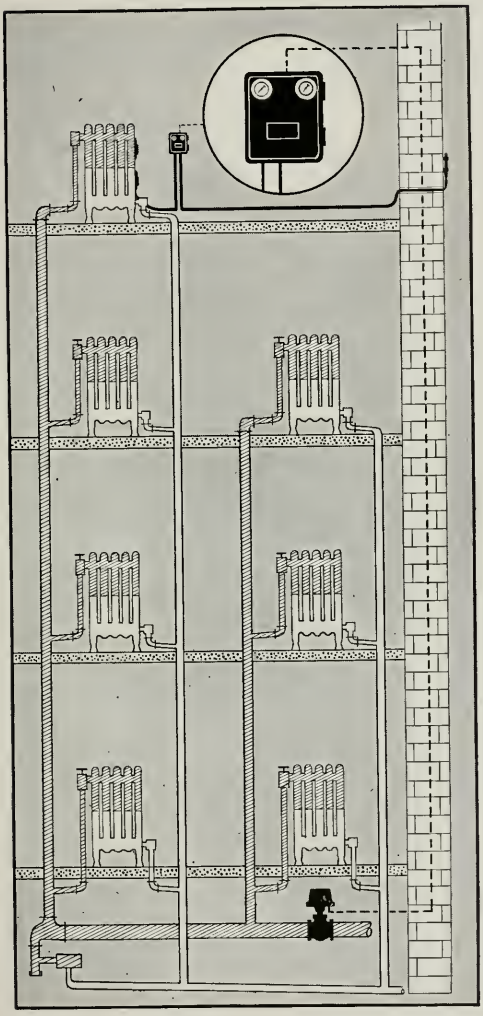

The diagram suggests a DUO-STAT at the "last" radiator, controlling steam supply to a "Heating Zone."

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Thumb Tacks and T-Square

UPON an aerial photograph of San Francisco Bay, with Oakland in the background, (frontispiece in this issue) architects for the San Francisco-Oakland Bay Bridge have cleverly drawn in to scale a representation of the world's largest bridge, 8¼ miles long, (5 miles over water) which will connect Alameda and San Francisco counties. The west half of the bridge is a suspension structure comprising twin suspension bridges anchored into a huge concrete monument in the center.

A double-deck tunnel pierces Yerba Buena Island, occupied by Army, Navy, and Lighthouse services, and the double-deck bridge continues over a 1400-foot cantilever span, five through truss spans, and 14 deck truss spans, before it lands on a fill extending out from the Oakland shore.

At the eastern shore, trestles carry the bridge traffic on to three branches — one for Berkeley, one for Oakland, and one for the business section of Oakland and Alameda.

The piers of this bridge—51 in number —set new marks on engineering frontiers, going deeper below water than any previous substructure has heretofore been built. Some of the piers go as far as 237 feet below low tide.

The two suspension bridges have 2310-foot main spans.

The lower deck carries two tracks for interurban electric cars and three lanes for heavy trucks, and the upper carries a 58-foot highway for six lanes of automobiles.

• • •

MICHAEL J. McDONOUGH, President of the Building Trades Department of the American Federation of Labor, has made an appeal to the 1,500,000 building tradesmen of the country to get behind the Housing Administration. The Housing Act signed by President Roosevelt is now in effect and loans for repair and modernization are being made. Under it immense volumes of money, the life blood of the building industry, now becomes available for the repair and modernization of old buildings and the erection of new. It carries with it the promise of employment so long denied the building tradesmen of the country, 80 percent of whom are now idle.

During the last five years a shortage of not less than 1,000,000 homes has piled up. There are 13,000,000 buildings in need of repairs, 3,500,000 of which require major improvements to make them safe and habitable. In addition there is an enormous number of homes in need of modernization and extension. Altogether this constitutes a greater volume of work than was required to restore the war devastated regions of France and Belgium, and once well under way should provide reasonably steady work for years to come.

• • •

WHAT is this National Housing Act going to do for the architect and engineer?

That is a question you hear repeated many times wherever you go, up and down the Coast. Most everyone seems optimistic but nobody is prepared to make a definite prognostication.

When the Housing Act was approved the president of the American Institute of Architects addressed a letter to President Roosevelt in substance as follows:

Your National Housing Program has aroused new hope in the building industry and in the architectural and engineering professions.

These two professions, particularly the architects, have been making a tragically slow recovery from the prostration of 1932.

Knowing that you desire all points of view, and on behalf of the architects of the country, I respectfully submit for your consideration the following observations, and recommendation:

(1) There is a great shortage of houses, and there is a large field for modernization and repair;

(2) The National Housing Act provides ways and means for meeting these requirements—if properly administered;

(3) In the administration of the Act, it is essential that the Government, through local agencies, exercise some control of the quality of the new work and the modernization or repair of the old work—for the benefit, comfort, and satisfaction of the owner, for the general improvement of the community, and to assure that the banks and the Government are protected against losses resulting from poor design and indefinite specifications;

(4) These essentials, we believe, will be assured if the Administrator of the National Housing Act will avail himself of the services of the architectural profession in the communities in which this work is to be done.

The reply from the White House was that the President wished to give the assurance that these suggestions would have his consideration in arranging the new housing set-up.

As we have already stated, the Housing Act is in force but so far it hasn't helped the architect any. Nor is there any indication that the profession is going to benefit materially from the Act, as time passes. Loans up to $2,000 only are being made for alteration work and there is not very much architecture in a $2,000 repair job. Most of the improvements will probably not run more than $500 or $600 which amount would cover the cost of painting, papering, new plumbing fixtures, a new roof, replacement of old foundations, a new heating plant, tiled bath rooms, etc. Such improvements do not necessarily call for the services of an architect or engineer. Any reputable contractor can take care of these things and in advance make an estimate of the needs and probable cost of the projected work for the loaning company. So this disposes of any possibility of employing an architect.

There may, however, be a few cases where a man owns several pieces of property—stores, for instance, upon which he may borrow as much as $2,000 on not more than five properties, or $10,000 altogether. These five properties might all be stores and in that event there would be some work for an architect in modernization. This would bring him a six per cent commission, or $600.

Enough money to pay his office rent and pay roll a couple of months maybe!

• • •

There are a lot of people who would like to fix up their homes under this new Housing Act but will they be able to secure a loan? Certainly not if they are already in debt and are paying installments on previous loans. And how many of us are there who haven't some other outstanding obligation?

Your monthly income must be at least five times as much as the monthly installment on the modernization loan you wish to secure. So, besides having an adequate regular income, you must have a good credit record in your community. The mortgage on your property must be in good standing and there must be no delinquent taxes, interest or liens against the property. You are not permitted to use any of the money borrowed for any other purpose except property improvements. The materials you use and the contractor you select must be approved by the lending agency.

On Ye Editor's street practically every home needs painting and miscellaneous improvements, but up to this writing nobody has gotten a loan. Is this instance a typical one, or is it a case of each one holding back till he finds out what the other fellow is going to do?

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SEPTEMBER
1934

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WE DO OUR PART

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Drawn to scale by Arthur Brown, Jr., T. L. Pflueger and J. J. Donovan, Architects

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AERIAL PHOTOGRAPH OF SAN FRANCISCO BAY, SHOWING
THE NEW BAY BRIDGE AS IT WILL APPEAR WHEN COMPLETED

DRAWN TO SCALE BY THE ARCHITECTS, ARTHUR BROWN, JR.,
T. L. PFLUEGER AND JOHN J. DONOVAN

THE ARCHITECT AND ENGINEER

SEPTEMBER 1934
VOLUME 118
NUMBER THREE

Modernization

by Edward T. Foulkes, Architect

ANTICIPATING by at least two years the modernization and rehabilitation campaign which the Federal government is now sponsoring and encouraging financially, the Downtown Property Owners' Association of Oakland started a similar program among its own membership in the fall of 1932.

This program has attracted wide interest among builders, contractors, realtors, and others interested in building and employment conditions, as it has demonstrated by actually completed structures the practicability of the idea of rehabilitation and its especial adaptibility to stores and business buildings.

One of the unique features of the Downtown Property Owners' building and modernization campaign is that it was started by the property owners themselves: not by any group of people interested in creating a demand for their products or for their services, as is usual in campaigns of this type.

The fact that in its execution the plan has given employment to scores of workmen, and has resulted in the spending of thousands of dollars for materials and supplies with local dealers, has been a fortunate result, but only a secondary issue with

DETAIL OF SMALL SHOP, REMODELED STORE BUILDING, HOLLYWOOD, CALIFORNIA
H. Roy Kelley, Architect

JONAS BUILDING, OAKLAND, CALIFORNIA, BEFORE ALTERATIONS

JONAS BUILDING, OAKLAND, CALIFORNIA, AFTER ALTERATIONS
Edward T. Foulkes, Architect

the owners. Their purpose was directly and solely concerned with the improvement of their buildings to the end that the income from these structures could be increased.

Primarily the program was worked out for the purpose of taking advantage of the lowered building costs existing at present to bring many of the stores and buildings in the downtown district of Oakland up to date and to improve their appearance in order that they might compete with the newer, retail buildings which had been attracting tenants formerly occupying the less modern structures.

The owners realized that with the low rentals being offered in all buildings, tenants were very liable to move into modern structures in preference to remaining in the older buildings.

As soon as the building work was well under way, other unexpected but worthwhile results were noted. The constructive activity had an encouraging effect upon other owners and business men of the district. They decided that they, too, could profitably improve their buildings by sponsoring alterations, repainting or interior changes that would cost less now and give them the advantage of being prepared for the renewal of business activity when it should come.

How Program was Worked Out

The method by which the Downtown Property Owners' Association's modernization program was worked out and is now being carried on is worth describing.

The job of modernizing and rehabilitating the downtown area was assigned to a separate department of the Association. The responsibility for the execution of the proposed work was left to a director of downtown development. A committee of experienced property owners or their representatives was appointed to assist in the undertaking.

ABRAHAMSON BUILDING, OAKLAND, BEFORE ALTERATIONS

ABRAHAMSON BUILDING, OAKLAND, AFTER ALTERATIONS
Edward T. Foulkes, Architect

PARK BUILDING, OAKLAND, BEFORE ALTERATIONS

PARK BUILDING, OAKLAND, AFTER ALTERATIONS
Edward T. Foulkes, Architect

Previously the writer had interested one of the property owners with a remodeling suggestion which added little or nothing to the load of the original structure—one that introduced a permanent exterior color treatment and followed the modern trend of architectural design. Costs were secured and the owner was so favorably impressed with the results to be obtained for so small an outlay, that contracts were soon signed and the work started.

The writer was called in and consulted. He was then selected as a permanent member of the modernization department. His first job was to study the structures of various buildings in need of remodeling and to advise upon the possibilities offered by the buildings and to estimate the approximate cost of such alterations.

A meeting between the owner, the architect and the director of development was arranged and the results of the study presented to the latter.

The owners were amazed at the striking changes which were shown as possible and at the low cost at which they could be made under present conditions.

Eleven Buildings Modernized

Owners of three of the buildings first selected for study for proposed modernization were so favorably impressed that financing was arranged, contracts let and the work begun within a few weeks of the presentation of the suggested plans by the association's modernization department. Eleven buildings have now been completed and the accompanying photographs illustrate the distinct improvement the alterations have made in the appearance of some of them. Space will not permit publication of photographs of all of the buildings rehabilitated.

The results of the modernization program have worked out as follows: first, the appearance of the district was distinctly improved. Secondly, the leases in the buildings modernized were renewed, and other new ones taken. The leasing value of the properties had been definitely enhanced. The merchants of the downtown retail district felt that the renewed activity

SEVENTY-THREE YEAR OLD MASONIC TEMPLE, OAKLAND, BEFORE ALTERATIONS

MASONIC TEMPLE, OAKLAND, AFTER MODERNIZATION
Edward T. Foulkes, Architect

MATILDA BROWN BUILDING, OAKLAND, BEFORE ALTERATIONS

Faced with Gladding, McBean Hermosa Tile

MATILDA BROWN BUILDING, OAKLAND, AFTER MODERNIZATION
Edward T. Foulkes, Architect

STORE BUILDING OF MRS. MABEL L. BIRELEY, HOLLYWOOD, BEFORE ALTERATIONS

STORE BUILDING OF MRS. MABEL L. BIRELEY, HOLLYWOOD, AFTER REMODELING

H. Roy Kelley, Architect

DETAIL OF BEAUTY SHOP, STORE BUILDING, HOLLYWOOD, AFTER REMODELING
H. Roy Kelley, Architect

and new leases in the downtown area indicated the permanency of the established retail district. They appreciated the interest which the owners of the properties were taking in making improvements which added to the business values of their stores and were encouraged by this helpful attitude on the part of the owners to make plans of their own for expansions and increased business activity.

THE BIRELEY BUILDING, HOLLYWOOD

The remodeling of this building consisted of new shop fronts and such interior work as was required for space to be occupied by a beauty shop. One street facade was set back five feet for a street widening project. The original building was very difficult to rent, due to its run-down condition. Soon after the remodeling, enough floor space was leased to assure an income amounting to about 60% of the total maximum income based on the established schedule of rental rates. The value of the property was greatly increased by the improvements and in addition the owners are now receiving an income sufficient to carry the building despite the fact that there are temporary vacancies due to a street widening project on one street side.

The exterior walls of the building are smooth cement plaster painted oyster white. The roof cornice and details of trim around the store fronts are copper chemically oxidized to give it a patina of soft green. The front of the beauty shop has details of Botticino marble and enameled metal. The awnings are of deep warm buff with valences striped in three shades of green. All of the sign panels have background the same color as the awnings and the lettering is green for all shops, a requirement embodied in the leases.

Reconditioning

by A. C. Holden, A. I. A.

MOST owners of property, especially owners of depreciated properties, can use a little money for improving their holdings. Most owners know that unless they keep doing something they ultimately have to meet two serious problems — depreciation and obsolescence. Depreciation is due to the physical wearing out of property. Obsolescence is due to the psychological wearing out of property.

That which happens to an individual piece of property happens also to the neighborhood in which it is situated. If one man in a group keeps his house well painted and the roof in repair and yet his neighbors allow their houses to depreciate the property of the individual will suffer depreciation, because of the neighborhood.

Obsolescence takes place because styles change, men find better ways to build houses, or better ways to live. A certain amount of systematic upkeep and improvement can arrest or retard obsolescence just as a certain amount of repairs can curtail depreciation. Types of housing exist, however, which will remain obsolete even though so much money is spent upon them that the wisdom of the investment should be called into question.

There should be some way of finding out how much money ought to be spent in upkeep, repairs, and improvements, both as a general rule and in the present emergency. Obviously if credit is extended to get work done, that credit has got to be balanced by the use that can be made of the things produced at some time in the future. Therefore, the measure of the usefulness of modernization is that the improvements made will be such as to give better and more economic results than can be achieved by building new.

It pays, for example, to fix up a tumble down farmhouse, because the soil about it is fertile and the shade trees planted are good, and all the other advantages of years of accumulated toil outweigh the consideration of starting anew in another location. The same applies to the old town house on the shaded village street, provided, however, that the advantages of quick transportation brought by the automobile do not make outlying land more desirable and even more available.

It does not pay to modernize a single house on the village street if the other neighbors insist upon permitting their properties to continue to depreciate at such a rate that no one who could afford to would want to live in the rehabilitated house. It does not pay to pour money for rehabilita-

tion into the city slum where congestion has been so great that the buildings are improperly planned for light and air, where surroundings are tawdry, and public morals bad, unless sufficient work can be done to change these conditions.

It does not pay to put money for rehabilitation into properties which have been held for such high prices that it has not been thought necessary to liquidate past credits loaned on the properties or where it has not been possible to do so. High interest charges are the result of unliquidated credits. They usually mean high rents, skimping on maintenance and frequently also delinquent taxes and inadequate city control of the neighborhood.

Such are the pitfalls in the way of extending credit for modernization. The unwise extension of credit always becomes a public burden. It is therefore essential on the one hand to guard against mistakes and on the other to look ahead to find the channels into which credit may flow and promote the public good.

If the extension of credit is to be an individual property, it is safest to select a neighborhood which is improving and where the majority of properties are in better shape than the property to be modernized, but by all means in a neighborhood where the majority of the owners are strong enough to keep their properties up to the desired standard.

If, however, it is necessary to extend credits to depreciated and obsolescent properties which are located in run down or questionable neighborhoods, then a plan must be worked out which will permit general neighborhood rehabilitation and which will make the individual loan a part of the co-ordinated neighborhood improvement.

Unfortunately we Americans have not yet developed a technique for group improvement. We have no means for controlling the improvements to be made in the interest of group homogeneity, nor have we yet devised a means for making the neighborhood a surety for the proper administration and liquidation of the loan.

We have lacked leadership of the sort that can consolidate conflicting and divergent interests and unite men in a common purpose. Strange to say that in a nation, whose motto is "e pluribus unum," we have not yet realized that the principle which we have so well applied to our Federal union, may be applied with even greater advantage to the neighborhood.

It is as possible for individuals as for states to act in concert without loss of individuality. It is not only possible but desirable to draft loan contracts for modernization in such a manner that full advantage may be taken of common neighborhood interests and by such means the neighborhood may itself become the surety that the credit extended will be both wisely administered and properly liquidated.

There is another important aspect of modernization which must be touched upon. Those who have opposed slum clearance and the construction of low rental housing are letting it be known that they prefer modernization because it does not add to the existing vacancy problem from which real estate has been suffering.

This is not a complete statement of the truth. Many proposals for modernization contemplate the subdivision of present housing into smaller suites. The argument is advanced that living conditions have changed, that families are smaller, and that the larger quarters simply cannot be rented.

We are faced with the necessity of coming to a decision as to how to solve the problem from the point of view of the greatest social and economic good. It stands out clearly that our housing equipment needs overhauling and that it is vital to the well being of society to get the building industry back to work.

Housing

THE ITINERANT*

by Vincent Brown

CALIFORNIA differently than most states has a problem difficult of solution in that it harbors within its borders a large floating population, mostly alien, engaged in following seasonal crop harvests. On account of the diversity of the crops grown in this state all the year round, and the shortness of the harvest season for many vegetables and fruits, proper housing of migratory or itinerant labor, in consideration of existing economic conditions, is a matter of serious concern not only to those charged by law with the duty of supervision, but also to the people of the state at large.

More than twenty years ago our California legislature enacted what is known as the "Labor Camp Sanitation Act" and this statute as subsequently amended sets the standards for housing labor upon the premises of the employer. In addition to the terms of the law, a code of simple regulations was also prepared for the use of employers and operators of labor camps.

Since we are dealing with the housing of migratory labor it must be understood that it is not always possible to apply the same standards to camps of a transitory character as would be applied to those of a more permanent nature. What would be deemed a necessity in a labor camp established in the lumbering section of the state to remain for a period of years, would work a hardship upon an operator of a camp provided for pea pickers whose work is finished in less than thirty days.

Among the salient features of our Labor Camp Law the following six are of particular interest:

1. Bunk houses, tents, or other suitable sleeping places must be provided and must be in good structural condition so as to afford shelter against the elements and exclude dampness.

Enforcement of this provision assures the worker of decent quarters and protects him from the "ground for a floor and sky for a roof" type of sleeping accommodations. It eliminates the ragged tent, brush shelter, barn or stable formerly considered sufficient for the lodging of the worker.

2. Suitable bunks or beds shall be provided for employees. A clear space of twenty inches measured from floor to ceiling must be allowed between beds or bunks. A mattress or equally comfortable

*Abstract of a paper read before the Western Conference on Government at the University of California, Berkeley.

bedding must be supplied upon request, a reasonable charge for which must be made by the employer. Ticks or containers must be supplied if straw or other substitute for mattresses is used. In this manner the common practice whereby the only bed supplied was space on the floor or ground with a little straw thrown in is done away with. Platform bunks have been eliminated as well as wooden bunks containing loose straw, which became rapidly infested with vermin. Comfort and cleanliness in beds are made possible.

3. Dining rooms, kitchen or other structures where food is cooked, prepared or served must be kept clean and sanitary; opening must be screened, cooking utensils, dishes, knives, forks, spoons and other implements for eating must be kept clean, unbroken and sanitary.

Proper protection for food is most essential. Contamination of food in filthy and unscreened kitchens is unavoidable. Such a provision not only acts as a measure for protection against disease but affords comfort to employees during meal hours.

4. Every camp must provide and properly maintain suitable bathing and toilet facilities.

When state regulation of labor camps commenced bathing facilities were entirely lacking, but beyond that such installation was deemed an unheard of and entirely unreasonable proposal. Men employed in camps had never bathed, therefore they never would bathe; so why should baths be furnished? Today the properly equipped bath house is as much a part of a camp layout as the kitchen, and it is used.

The highly primitive burlap or shack structure used for toilet purposes has been displaced with properly built and maintained privies, and in many instances flush toilets, and a grave danger to public health removed while a standard of decency and privacy is established.

5. Garbage, kitchen waste and refuse must be placed in covered receptacles, must be emptied daily or oftener and the contents burned, buried or otherwise disposed of. Drainage from sinks must be carried through covered drains to covered cesspools or septic tanks or other satisfactory disposition made.

It is elementary that proper garbage as well as sanitary treatment of drainage are highly essential to healthful camps.

6. At every camp a responsible person must be appointed to assist in keeping camps clean.

The best built camps, the most modern equipment, will soon deteriorate if care is not given to their upkeep. Those employed in the field cannot be expected to look after this phase and in order that proper standards may be maintained it follows that some definite person must be assigned to such work.

It must be recognized that in California, as elsewhere, agriculture has suffered with other forms of human endeavor and that during the period of stress it would be an unjust abuse of authority to enforce the terms of the labor camp law in the same fashion as in good times. Accordingly the enforcing power has contented itself with requiring a minimum of standards consistent with health and safety. Where an operator provides a sufficient supply of wholesome water, adequate toilet and bathing facilities commensurate with the number of employees, proper garbage and drainage disposal and keeps the camp location clean and free from debris, latitude is allowed with reference to sleeping quarters.

California's labor camps house between 70,000 and 80,000 persons every year, about fifty per cent of whom are foreign born. Approximately forty per cent of this entire population is made up of women and children.

HISTORIC AMERICAN BUILDINGS SURVEY

NATIONAL PARK SERVICE
U. S. DEPARTMENT OF THE INTERIOR

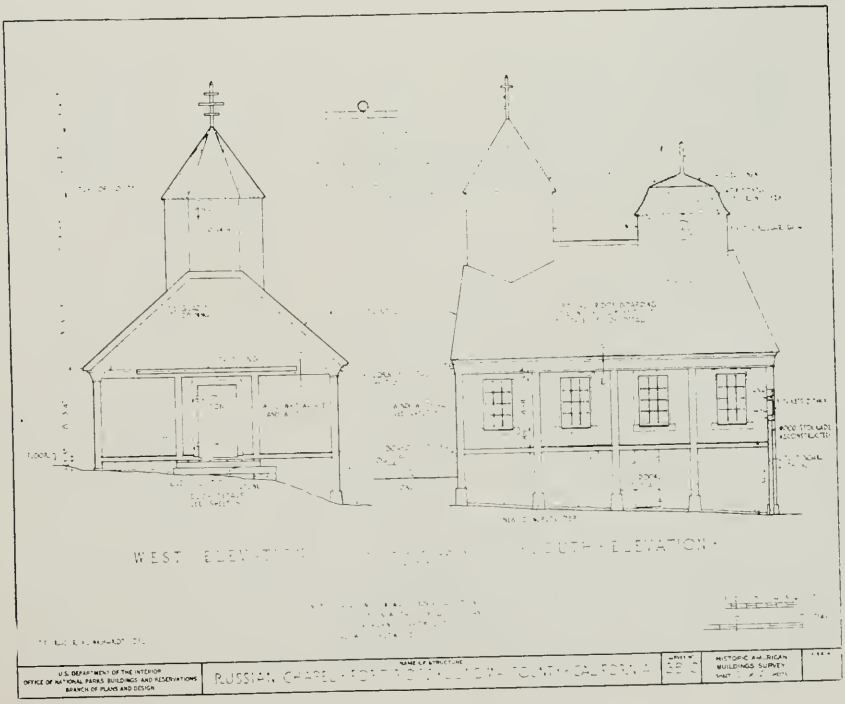
DISTRICT NO. 38
IRVING F. MORROW
DISTRICT OFFICER

Portfolio No. Four

ST. JAMES EPISCOPAL CHURCH,
SONORA, CALIFORNIA

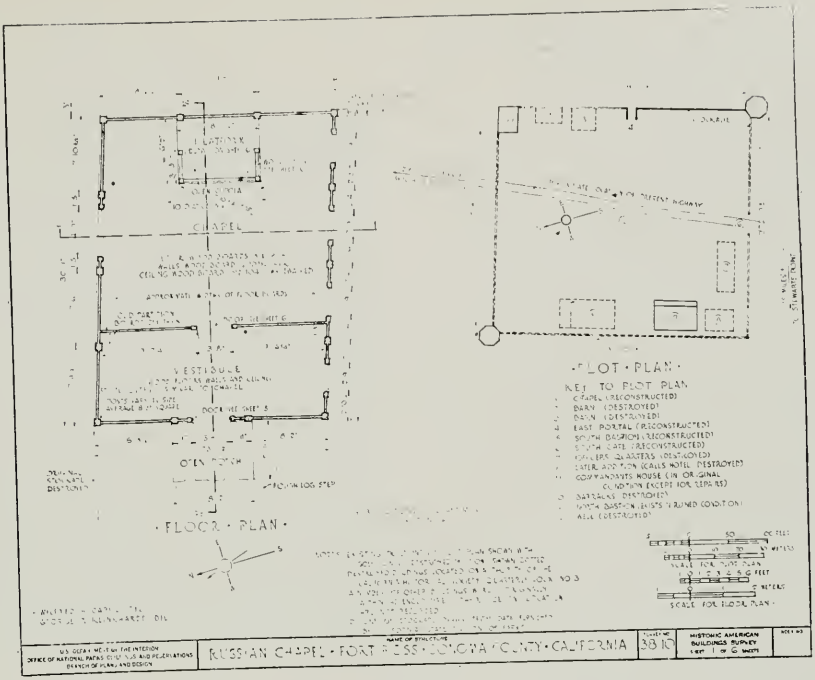
RUSSIAN CHAPEL, FORT ROSS, SONOMA COUNTY. FORT ROSS IS THE ONLY RELIC OF THE RUSSIAN OCCUPATION OF CALIFORNIA. IT WAS SETTLED IN 1812 AND AFTER AN UNSUCCESSFUL CAREER OF SOME 30 YEARS WAS SOLD TO CAPTAIN JOHN A. SUTTER, WHO, AT THAT TIME, WAS ONE OF THE LARGEST LAND HOLDERS IN THE STATE.

FRONT AND SIDE ELEVATIONS, RUSSIAN CHAPEL, FORT ROSS. THIS BUILDING WAS ERECTED IN 1812-14. IT IS ENTIRELY OF WOOD AND CONTRARY TO THE SPANISH ARCHITECTURE OF CALIFORNIA, CLEARLY SHOWS THE INFLUENCE OF A WOOD TRADITION IN THE HOME COUNTRY.


SOUTH ELEVATION
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS AND RESERVATIONS
BRANCH OF PLANS AND DESIGN
RUSSIAN CHAPEL
HISTORIC AMERICAN
BUILDINGS SURVEY

PLANS, RUSSIAN CHAPEL, FORT ROSS, SHOWING CHAPEL AND ORIGINAL INCLOSURE. THE CHAPEL WAS PRACTICALLY DEMOLISHED IN THE EARTHQUAKE OF 1906. IT WAS RECONSTRUCTED FROM THE ORIGINAL MATERIAL IN 1915-1917 AT WHICH TIME MINOR CHANGES WERE MADE IN THE DESIGN. IT IS NOW THE PROPERTY OF THE STATE OF CALIFORNIA.

ST. ANN'S CHURCH, COLUMBIA, TUOLUMNE COUNTY, CALIFORNIA. THIS EDIFICE, BUILT OF BRICK IN 1855, IS ONE OF THE OLDEST CHURCHES IN THE MINING COUNTRY. CHURCH AND GRAVE YARD HAVE BEEN PRESERVED AS A VERITABLE ISLAND SURROUNDED BY COUNTRY DEVASTATED BY HYDRAULIC MINING.


CHAPEL
VESTIBULE
OPEN PORCH
FLOOR PLAN
PLOT PLAN
KEY TO PLOT PLAN
RUSSIAN CHAPEL · FORT ROSS · SONOMA COUNTY · CALIFORNIA
HISTORIC AMERICAN BUILDINGS SURVEY

PRESBYTERIAN CHURCH, MARYSVILLE, CALIFORNIA. THIS STRUCTURE, BUILT OF BRICK IN 1859, STILL REMAINS ONE OF THE BEST DESIGNED CHURCHES IN CALIFORNIA. THE NAME OF THE ARCHITECT HAS NOT BEEN ASCERTAINED.

CHURCH IN DOWNIEVILLE, SIERRA COUNTY, CALIFORNIA. THIS BUILDING IS TYPICAL OF THE SMALL MEETING HOUSES THROUGHOUT THE LENGTH OF THE MINING DISTRICT.

Building Loans

How to Obtain Them

Funds for modernization are now available. The Federal Housing Administration has begun to function as evidenced by announcements of banks and building and loan associations that they are prepared to receive and grant applications for loans from responsible parties. Ward M. Canaday, Director of Public Relations of the Federal Housing Commission, has sent out information about the Governments' modernization credit plan to banks, trust companies, finance companies, etc., explaining Title I of the National Housing Act. Information relative to Titles II and III of the Act will be released subsequently by the Federal Housing Administration.

The pamphlet describes the conditions under which financial institutions may make personal character loans without mortgage security to people who desire to repair or remodel their property.

This initial step in the Better Housing Program will make it possible for financial institutions immediately to complete plans for lending under the National Housing Act.

MOST of us are prone to think of the casualties of the past four or five years of depression in terms of its human victims—and rightly so. But there have been other victims. Millions of American homes, apartments, offices, stores, factories, and other buildings have suffered seriously from lack of normal care and attention. The ravages of five years of depreciation and obsolescence have not been taken care of adequately. Property owners have not been able to provide for the necessary alteration, repair and improvement of their property out of their reduced incomes. The shrinkage in values of real property and other collateral has made it impossible for owners to obtain credit which in normal times would have been available to them and which would have been repaid out of their regular income.

The magnitude of this deferred work is great. All told, more than sixteen million buildings in this country have reached a more or less serious state of disrepair.

Of the sixteen million buildings, some three million have already reached such a physical state that nothing short of a major building operation can save them. In fact, the repair of many of them is unjustified, socially and economically, and their immediate fate should be demolition. The remaining thirteen million require for the most part only minor repairs to put them in good condition; but it is essential that this reconditioning be initiated at once.

No financial institution interested in preserving the accumulated savings of our people can fail to recognize the seriousness of this situation nor fail to co-operate in any feasible effort to correct the condition.

An Opportunity and a Challenge

The situation presents an opportunity and a challenge. The opportunity is not merely to stop the destruction of property

values, but also to provide employment for hundreds of thousands of those workers who have suffered most severely from the depression.

Approximately 4,000,000 men and women, formerly employed either in the construction industry itself or in allied or contributing industries, are suffering from lack of employment in their accustomed fields. These millions of unemployed form a substantial portion of those who, during the first five months of 1934 through one form or another of relief and emergency employment, required the expenditure of many millions of public funds *each month*, all of which must be recouped by taxation.

Normally, a large proportion of these millions of specialized workers would be hired directly or indirectly by property owners to maintain their property in good condition. If such work is undertaken *at once*, the effect on employment will be cumulative. Manufacturers of building materials and other durable goods will in turn employ additional workers; the transportation industry will receive its share in business revival and purchasing power in general will be augmented. Such increased purchasing power, once circulating with requisite velocity, will mean increased business for banks, local merchants, professional groups, and others in service activities.

An adequate expenditure to take care of the accumulated demand for repairs, remodeling, and modernizing can help accomplish such a result. Therein lies the challenge.

The National Housing Act

Congress and the President have accepted this challenge. Through the passage of the National Housing Act, signed by the President on June 27, 1934, a Federal Housing Administration has been created. Under this authority, all elements in each community throughout the land can cooperate to help remove the "key log" in the credit jam that has been holding back this work, so that normal credit will flow again in amounts adequate to meet all legitimate needs.

To date, adequate credit has been lacking. First, the liquid assets of property owners in general have been depleted. They, therefore, have been unable to provide collateral which would safeguard our banks and other financial institutions in extending them credit. Second, the current incomes of many property owners, while better assured than they were, may not be sufficiently assured to be accepted by financial institutions as a basis for credit in the absence of collateral. Third, unsecured personal loans, of adequate term for the purpose needed, even to bona fide property owners of highest integrity, have not provided sufficient liquidity to meet the proper requirements of good banking practice.

A New Plan for Providing Credit

This is an outline of the general method of procedure which may be followed by financial institutions participating in the better housing program of the Federal Housing Administration.

The Modernization Credit Plan uses tried and tested principles to produce a unique method for financing repairs, alterations and improvements for property owners. Operation can start immediately — today. Everything is ready.

Through the co-operation of financial institutions and the United States Government credit for property owners becomes

available on the most reasonable basis ever offered for such financing.

Financial institutions may supply credit by the method with which they are most familiar. By making loans or purchasing notes under the plan, financial institutions will obtain an investment providing a satisfactory return plus compensation for the extra expense of handling this type of transaction.

The Government, providing insurance without cost to cover any probable loss to the financial institutions, will contribute its share to make this type of paper a distinctive investment.

Dealers and contractors will profit from the additional business resulting from the plan. They will obtain cash in settlement for the cost of improvement jobs arranged by property owners; and they are expected to give property owners the benefit of lowest cash prices.

The Procedure to be Followed

The handling of modernization credits under this plan is very simple. Consider the case of a property owner who decides he wants to make certain improvements, has obtained estimates, and has decided how the job will be done. He may engage a contractor. He may engage his own labor. He may purchase materials from whomever offers the best prices. He may do his own work. There is no limitation on how he may do the job.

To offer a plan practical throughout the nation, flexibility is essential. Considering the various types of financial institutions and different methods of financing which may be used, several alternatives are possible.

This type of credit consists of financing a lasting home improvement on a time payment basis. For the first time a plan universal in scope is offered combining the best features of cash purchase and extended payment.

Here, for instance, are typical plans:

I. Loans by Banks

Property owner goes directly to an approved bank, fills out and signs *property owner's credit statement*. If approved, he signs a promissory note. He then receives the proceeds and either engages contractors or purchases materials and does the work himself and pays the bills on the lowest cash basis.

II. Loans by Industrial Banks

Property owner presents his credit statement to the financial institution and if approved signs promissory note and receives the proceeds in cash. The principal difference between this transaction and the bank loan referred to above probably would be that a discount note would be used, and monthly payments or deposits might be accumulated to apply in a lump sum to pay the note at maturity.

III. Notes Purchased by Finance Companies

Property owner submits his credit statement to a contractor or dealer. The latter submits the statement to a financial institution for credit approval. If approved, contractor proceeds with the work. Upon completion of the job the property owner gives the contractor his promissory note for payment. The contractor after endorsing the note, with or without recourse as arranged, sells it to the financial institution and obtains cash in payment of the job.

The Limit on Cost

There is one basic requirement with which every mehod must comply. A financial institution may not collect in interest

and/or discount and or fee a total charge exceeding an amount equivalent to $5 discount per year per $100 original face amount of the note, the note to be paid in periodic equal installments not oftener than once a month.

For example, this means that for a job costing $95, the note could have a face amount of $100 and the total return to the financial institution could not exceed $5, the property owner to make monthly installments of $8.34 (with adjustment on last payment). The above assumes a 1 year note. So that the rate of return on notes from 13 to 36 months shall be no greater than on a 1 year note, a slight reduction would be required in the discount for the longer terms — exact detailed figures being supplied in "Tables of Calculations" available to approved financial institutions.

Consider some examples of how this would operate.

(a) A bank, for instance, might make a loan at 6 per cent simple interest—or some other interest rate — to cover the normal lending service, and if so empowered obtain a service fee to cover the extra cost of investigation and handling installments and to compensate for the lack of a deposit balance on the part of the property owner. The only requirement is that the total amount so collected shall not exceed the equivalent of $5 discount per year on each $100, as stated.

(b) A finance company, or bank if so empowered, may deduct a discount of 5 per cent or a lesser amount, of the face of a note, which would include both the return for the use of the money as well as the handling or financing cost involved in this type of transaction. The only requirement is that the discount so collected shall not exceed $5 per year on each $100, as stated.

(c) A finance company, or bank, or other financial institution might arrange to handle the transaction this way: A note given by a property owner to a contractor or dealer providing for 6 per cent or some other rate of interest, will be purchased by the financial institution. The interest of course would be paid by the property owner. At the time of the purchase, discount fee could be deducted which might be absorbed by the contractor or dealer if so arranged. The only requirement, as in the other examples, is that the total amount, both in the form of interest on the note itself and the discount charge, shall not exceed an amount equivalent to $5 discount per year on each $100, as stated.

(d) The allowable total charge established above represents a maximum. Any financial institution desiring to provide modernization credits at a lower cost may, of course, do so. Finance companies or others, who prefer to purchase notes, adding the interest to the amount of the job, may do so provided that the total sum collected does not exceed an amount equivalent to $5 discount per year on a $100 note.

Loans or advances under this plan may be made only for property modernization purposes. For convenience in handling details of calculation, if the proceeds of a note are slightly in excess of the amount applied for, such excess may be considered as part of the modernization cost provided it is not more than $5 on any one note.

Insurance Provisions

A Contract of Insurance will be issued to each institution whose application for insurance is approved by the Federal Housing Administration. There will be no premium or other charge for such insurance.

This contract will protect financial institutions against all losses incurred on loans made or notes purchased by them up to total aggregate losses of 20 per cent of the total face amount of such notes held by

them, or on which they may continue liable, during the time such insurance contract is in force.

The highest known loss ratio on similar types of receivables has not exceeded 3 per cent, and it is hardly conceivable that these credits, extended by prudent institutions, could result in losses greatly exceeding this previous experience. The insurance provided is, therefore, tantamount to a complete guarantee for financial institutions. That is, if a financial institution acquires notes aggregating a total volume of $100,000, it will be insured against 100 per cent of loss on all items, up to total aggregate losses of $20,000. Losses this large have never been approached in America on this type of business, even in the worst depression years.

A financial institution may determine for itself, with complete assurance, that a note taken or purchased by it is qualified for insurance. If the note on its face complies with the requirements of the Federal Housing Administration and if the financial institution does not receive a return on the note in excess of the amount permitted, and, if the Property Owner's Credit Statement reveals the other facts necessary to make the note eligible, these may be accepted as final and conclusive proof of eligibility and no further evidence will be required by the Federal Housing Administration.

1. Promissory notes must be signed by owners of improved real property and must be valid and enforceable in the state in which they are issued. Owners of improved real property include, in addition to owners in fee, persons holding an equity under mortgage, trust, or contract, persons holding a leasehold under a renewable lease for 99 years or more and persons holding a lease-hold for a lesser term, provided such lease has more than fifty years to run. Except in unusual cases agreeable to the financial institution, notes should be signed by both husband and wife, unless forbidden by state law.

Notes may be signed by lessees, other than those which may be classed as owners, provided that the lease requires the lessee to make alterations, repairs and improvements and provided, further, that the final termination date of the lease is at least six months beyond the final maturity date of the note. In such cases, a certified copy of the lease must be furnished to the financial institution at the time the note is purchased and must be retained by it as part of its documentary evidence of the transaction.

2. Notes must not involve an obligation, the face amount of which is of less than $100 nor more than $2,000, even though the repair or remodeling job may cost in excess of the latter amount.

3. The financial institution may not collect as interest and or discount and/or fee of any kind, a total charge in excess of an amount equivalent to $5 discount per year $100 original face amount of note.

4. Notes may provide for the payment by the maker of a "late charge" not to exceed five cents per dollar of each installment payment more than 15 days in arrears, to cover the extra expense involved in following up and handling delinquent payments.

5. Notes may not have a final maturity in excess of 3 years. A financial institution desiring to make loans or purchase notes with a final maturity exceeding 3 years, but not more than 5 years, may apply to the Federal Housing Administration for permission.

6. Notes must be payable in equal monthly installments except the final in-

stallment which may be slightly less. However, if the income of the maker is received in the form of proceeds from the sale of agricultural crops or livestock, notes may be made payable in installments corresponding to income dates shown on the Property Owner's Credit Statement. Even in such cases at least one payment must be made yearly, however, and the proportion of total principal to be paid in later years must not exceed the proportion of total principal payable in earlier years.

7. The note must have been made to cover payments for alterations, repairs, or improvements upon real property belonging to the maker. An alteration, repair, or improvement job may include the cost of necessary architectural or engineering service, if used.

8. The note must not have been made to cover payments for movable equipment not considered a part of the real estate when installed.

9. The property to be improved must not have outstanding against it delinquent taxes or assessments. Such property must not have outstanding against it a mortgage or other lien not in good standing unless the holder of such encumbrance endorses the maker's obligation with recourse. Property having outstanding against it a demand mortgage such as used in some states, will be considered in good standing if the property owner is making the regular interest (and principal, if required) payments on it which he has been making either for the past three years, or since the execution of the mortgage.

10. The maker (or husband and wife, jointly, if both are signers) must have a stated bona fide source of annual income at the time of the application, at least equal to five times the annual payments which the maker must pay on the note (or notes, if the same maker appears on more than one such note).

11. Any number of separate notes may be made for improving a single piece of property, but the aggregate principal amount of such obligations may not exceed $2,000. Any notes in excess of this amount will not qualify for insurance, but if the notes are made or sold to more than one financial institution, each financial institution shall be entitled to rely on the Property Owner's Credit Statement as to the amount of prior notes.

No property owner may obtain credits to improve more than five separate pieces of property (not exceeding $2,000 principal amount of obligation on each property), without the prior approval of the Federal Housing Administration.

Credit under this plan will be based on the personal character and earning power of the property owner. No collateral, comakers or other endorsers are required in order to have the notes qualify for insurance.

Credit Standards to be Maintained

Full authority and responsibility rest with the financial institution for approving the credit of the property owner. The Federal Housing Administration believes this plan can be liberally administered so that any eligible property owner anywhere in the country may carry out improvements. Each note which meets with the simple requirements heretofore set forth, is insured automatically when acquired by an approved financial institution. This fact, however, should not cause financial institutions to relax their credit standards. Each financial institution will make such credit investigations as are deemed adequate to verify the statements made on the Property Owner's Credit Statement, even though so far as insurance protection is concerned the

statements of the borrower will be accepted as final as to correctness in the event a claim for loss becomes necessary.

It is vital that the property owner should not assume an obligation that is too large, or which extends over too long a period. The note should be liquidated within the life of the improvements for which the credit is obtained. Financial institutions should ask themselves: "Is it reasonable to expect that this property owner can pay back in installments of the size desired and within the time fixed, the amount of the note?" The fact that the conditions of eligibility provide for certain maximum periods does not mean that all notes should extend to the limits set. Financial institutions are given complete latitude, within the limits set, to determine the period which may be desirable and proper, in connection with the loans they may make or the notes they may purchase. The mere size of the note should not be the determining factor; all factors should be considered.

It is not the purpose of the National Housing Act to encourage unwise expenditure of money by property owners in improving property actually beyond the possibility of effective rehabilitation.

The advisability of proposed improvements to buildings which do not result in conformation with local zoning and other ordinances should be questioned. Property owners should not be encouraged to borrow where the proposed expenditure would increase the total cost of the property greatly beyond the cost of corresponding property in the same neighborhood. A $5,000 house in a $3,000 neighborhood generally will be an unwise investment.

Extra caution should be exercised before approving an expenditure by owners for modernizing properties located in areas marked either for early demolition or known as slum areas, or otherwise obsolescent or out of harmony with the zoning or city plan for such areas. It is suggested that financial institutions inform themselves of such areas in their respective communities to serve as a ready guide in acting on the extension of credit to property owners in such areas. Advancing of credit for other than minor or sanitary repairs of properties in such areas generally will not benefit the owners or the community and should be discouraged.

Expert Advice Desirable

Undertaking major structural changes in any building, small or large, without competent architectural or engineering supervision is a dangerous procedure because total costs are likely to mount far beyond original estimates made by the property owner.

While the regulations do not require the financial institution to determine whether or not the owner has spent or intends to spend the money wisely, the soundness of the expenditure naturally will have a direct bearing on the property owner's willingness to pay the note. Therefore, in their own self interest, financial institutions should exercise care in seeing that the interests of the property owner are furthered by the transaction. It should be possible, before any loan is made or note is purchased, to determine, through conversation with the contractor, the property owner or otherwise whether in each case the property owner's interests have been properly safeguarded.

THE MODERNIZED OFFICES OF J. WALTER THOMPSON COMPANY IN THE WRIGLEY BUILDING, CHICAGO, ILL.

Portals

FOR many years — through boom and depression — the advertising agency has furnished a fertile field for the architect. Nor have the arts been neglected.

A visit to New York or Chicago offices of leading companies in the field reveals a richness and originality which is rarely surpassed in other lines of business. Here, indeed, both architect and decorator have had a free hand.

While advertising agencies on the Coast have established themselves in fine offices, it is believed that the field here is still open to creative possibilities. Western architects, meanwhile, will want to consider some of the more interesting Eastern developments—not only for adaptation to the needs of Coast advertising firms, but also for offices in other fields.

The J. Walter Thompson Company, which has offices in San Francisco and Los Angeles, as well as in the East and abroad, has just completed the remodeling of its Chicago offices in the Wrigley Building. A brief description follows:

Tall, solid doors of ebony black, framed in aluminum with broad natural wood panels on either side, open into the new reception room which is planned to achieve the quiet tone of a comfortable library. Deep green woodwork, contrasting walls, a parquetry floor of glossy black rubber tile, the whole illuminated by table lamps, create an atmosphere of quiet restfulness. A circular bookcase, from floor to ceiling, low seats of modified modernistic style, a lovely old French Provincial table across the end wall with wood tables fashioned after French gaming tables designed for three players along the side walls, deep green leather chairs, and lamps whose shades reflect the same deep wood green, are features of the decoration.

Pictorial decorations include a series of early French engravings and a selection of pages out of advertising's past which demonstrate the cogency of the axiom of Marie Antoinette's milliner that "nothing is new except that which is forgotten." In the collection appears a classic precedent for Dr. S. Parke Cadman's widely discussed recent endorsement of a fountain pen. It is a full page advertisement from Godey's Lady's Book of 1889 in which Henry Ward Beecher gives his unqualified endorsement of Pear's soap. In that advertisement Mr. Beecher said: "If cleanliness is next to godliness, soap must be considered as a means of grace and a clergyman who recommends moral things should be willing to recommend soap. I am told that my commendation of Pear's soap has opened for it a large sale in the United States. I am willing to stand by every word in favor of it that I ever uttered. A man must be fastidious indeed who is not satisfied with it."

Other advertisements of the eighties and nineties reveal the prototype of present day continuity advertising, a violent attack by Sohmer Piano on the artist testimonials

then being used by Steinway and other piano manufacturers; and early examples of advertisements simulating editorial pages. One of the earliest advertisements shown is one by William Figg, master of swordsmanship, seeking patrons among gentlemen who wanted to increase their proficiency in the use of these side-arms "at home and abroad." This advertisement was written, illustrated and engraved by William Hogarth in 1720, and is illustrative of the commercial work that Hogarth did at the beginning of a career during which he became one of England's greatest painters.

The space immediately beyond the reception room provides exhibit room for art and advertising displays. Being featured here currently is an exhibition of modern photography and it is planned to change these exhibits each month.

The office interior has also been redecorated and refurnished, and an executive suite along the Michigan Avenue side has been added.

THIS CHARMING PLACE IS IN MONTEREY COUNTY
Clarence A. Tantau, Architect

Failure

Due to Improper Specifications

by A. A. Brown, C. E.

EDITOR'S NOTE:—*California is a timber producing state and the manufacture and sale of lumber and its products is one of our principal industries. Such failures as this redwood affair often serve as an excuse for urging the use of substitutes for lumber. When the recent termite ordinance was passed by the Los Angeles City Council, the use of redwood was prohibited for foundation purposes due to instances of its failure to resist termite damage. The author of the article which follows recently appeared before the members of the Board of Building and Safety Commissioners in Los Angeles to present research studies of the Termite Investigations Committee and others, which data showed that heart redwood containing not less than 15 percent of the hot-water-soluble extractive is termite resistant and also decay resistant. He recommended that a specification be prepared which would insure to the construction industry that redwood of the most durable grade would be supplied and that the use of such durable lumber be permitted under the ordinance. We are convinced that the best interests of the lumber industry will be served by an analysis of the causes leading to such failures as this, together with constructive suggestions for avoiding a repetition of these difficulties.*

IN reclaiming swamp lands comprising the Islais Creek Reclamation District, San Francisco, for use as new industrial sites, a temporary wood box drain was constructed. The box drain has a net cross sectional area of 8x14 feet. It is supported by two pile bents, spaced 10 feet on centers, with caps and stringers of Douglas fir and the plank sides, top, and invert of heart common redwood. All timber was untreated. The structure was of a temporary nature having an estimated use life of about 10 years. It was planned to ultimately replace the temporary construction with concrete as the industrial district developed. Instead of lasting 10 years the structure failed, due to decay of the timbers, in approximately 3 years.

The wood box drain was constructed in two sections. Work on the outlet portion north of Oakdale Avenue was commenced August 8, 1930, and completed December 5 of the same year. Work on the section south of Oakdale Avenue started October 16, 1930, and was finished June 3, 1931. The first failure occurred north of Oakdale Avenue on February 17, 1934, to be followed successively by a second failure on March 3 and the third break on March 15. Subsequently the cover fill was removed to avoid further collapse, thus exposing the box for detailed inspection.

In response to an inquiry from the Secretary of the Board of Trustees for the Islais Creek Reclamation District as to the probable cause of the failure, an investigation was made. The unsatisfactory service of timber in this structure is directly traceable to conditions that favor decay.

Dr. Reginald H. Cooley*, describing

*Pathologist and Director of the Madison Branch, Office for Investigations of Forest, Pathology, Bureau of Plant Industry, U. S. Department of Agriculture, Madison, Wisconsin, joint author of "Termites and Termite Control" published by the University of California Press.

conditions favorable to decay, says: "Decay is caused by fungi which grow on and in wood and destroy the wood substance as they grow. Generally speaking, the most important factor limiting their growth is moisture. However, temperature also affects the rate of growth, and consequently the rapidity of their destructive action. They are slowed up or stopped as the thermometer drops toward the freezing point, and they are killed by high temperatures. But they cannot grow at all, no matter how favorable the temperature, unless the moisture content of the wood is suitable for their development. Dry wood will not decay. Wood is food material for fungi, but they cannot use the food unless it contains at least 15 to 20 per cent of its weight in water. On the other hand, they cannot use the food when water is present in excess, that is, when the wood is thoroughly soaked through or is submerged in water. The latter conditions are found only under exceptional circumstances, for example, in piling which is driven below water level, and therefore need not be considered so far as ordinary buildings are concerned. The conditions most favorable for decay occur when the moisture content is somewhat above 20 per cent, and somewhat under the complete saturation point.

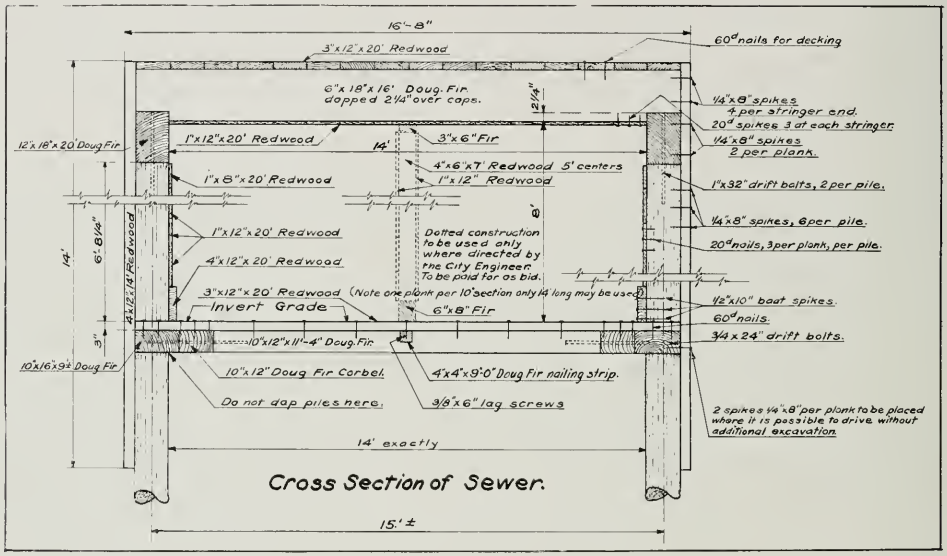

16'-8"
3"x12"x20' Redwood
60d nails for decking
6"x18"x16' Doug. Fir dapped 2¼" over caps.
12¼"
¼"x8" spikes 4 per stringer end. 20d spikes 3 at each stringer
¼"x8" spikes 2 per plank.
12"x16"x20' Doug Fir
1"x12"x20' Redwood
14'
3"x6" Fir
4"x6"x7' Redwood 5' centers
1"x8"x20' Redwood
1"x12" Redwood
1"x32" drift bolts, 2 per pile.
6'
1"x12"x20' Redwood
Dotted construction to be used only where directed by the City Engineer. To be paid for as bid.
¼"x8" spikes, 6 per pile.
20d nails, 3 per plank, per pile.
4"x12"x20' Redwood
3"x12"x20' Redwood (Note one plank per 10' section only 14' long may be used)
Invert Grade
6"x8" Fir
½"x10" boat spikes.
60d nails.
¾"x24" drift bolts.
10"x12"x11'-4" Doug. Fir
10"x16"x9'-3" Doug Fir
10"x12" Doug Fir Corbel.
4"x4"x9'-0" Doug Fir nailing strip.
Do not dap piles here.
⅜"x6" lag screws
2 spikes ¼"x8" per plank to be placed where it is possible to drive without additional excavation.
14' exactly
Cross Section of Sewer.
15'±

FIG. 1—CROSS SECTION OF ISLAIS CREEK SEWER, SAN FRANCISCO

"With these facts in mind, the principles of decay prevention can be reduced to the following general rule: To prevent decay, control the moisture content of the wood, or, if conditions of use are such that moisture content cannot be controlled, use wood treated with a suitable preservative.

The Danger of Infestation

"Infestation may and often does take place before wood is ever placed in a building, either through fungus spores that are

FIG. 2—VIEW SHOWING CONDITION OF REDWOOD COVER PLANKS, ISLAIS CREEK SEWER, AFTER FILL HAD BEEN REMOVED

always floating in the air, or because the lumber has been carelessly stored on the ground, under leaky sheds, or in direct contact with decaying timbers. After wood has been built into a structure infestation may result from contact with dirt or rubbish, with moist foundation or basement floors, or even with the ground itself. Building-rot fungi grow best in damp, stagnant air. Provision should be made for adequate ventilation. Where the decay hazard is great, either the most durable of woods or well treated material should be used. In any event, the general rule for decay prevention holds good — either control the moisture content of the wood or use treated wood."

The conditions described by Dr. Cooley as being essential to the rapid destruction of wood by fungi were present in the Islais Creek job. The air in the box was warm, with high humidity and no possible control of moisture. It was the Douglas fir 6″x18″ roof stringers and 3″x12″ redwood deck planks that suffered the greatest destruction by fungi. (See Fig. 1). The heart common redwood deck planks were in many in-

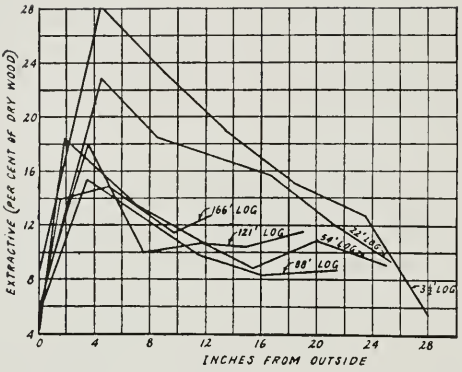


FIG. 3—DISTRIBUTION OF HOT-WATER-SOLUBLE EXTRACTIVE IN A VIRGIN REDWOOD TREE THROUGHOUT CROSS SECTIONS TAKEN FROM SIX HEIGHTS. CHART PREPARED BY SHERRARD AND KURTH OF FOREST PRODUCTS LABORATORY, FOREST SERVICE, U. S. DEPT. OF AGRICULTURE, MADISON, WISCONSIN.

stances completely destroyed as were some of the 6"x18" Douglas fir supporting timbers. (See Fig. 2). On the other hand, some of the redwood deck planks are as sound as the day they were installed. This wide variation in the decay resisting qualities of heart common redwood presented an interesting study.

The Termite Investigations Committee found that certain pieces of heart redwood had resisted decay and termite attack for considerable periods of time and other pieces of heart redwood had a comparatively short service life. Under laboratory conditions there was a wide variation of resistance of redwood to termite attack. Commenting upon these tests Professor Charles A. Kofoid* says: "Our tests show that the capacity of wood to resist termite attack was in general the greatest in those blocks having a high percentage of extractive, and lowest in those blocks containing the low percentages."

Conclusions of Professor Kofoid

Professor Kofoid concludes from these tests that:

(1) "Redwood containing hot-water extractive in amounts above about 12 per cent by dry weight of the wood, is toxic to the Protozoa in 60 days or less.

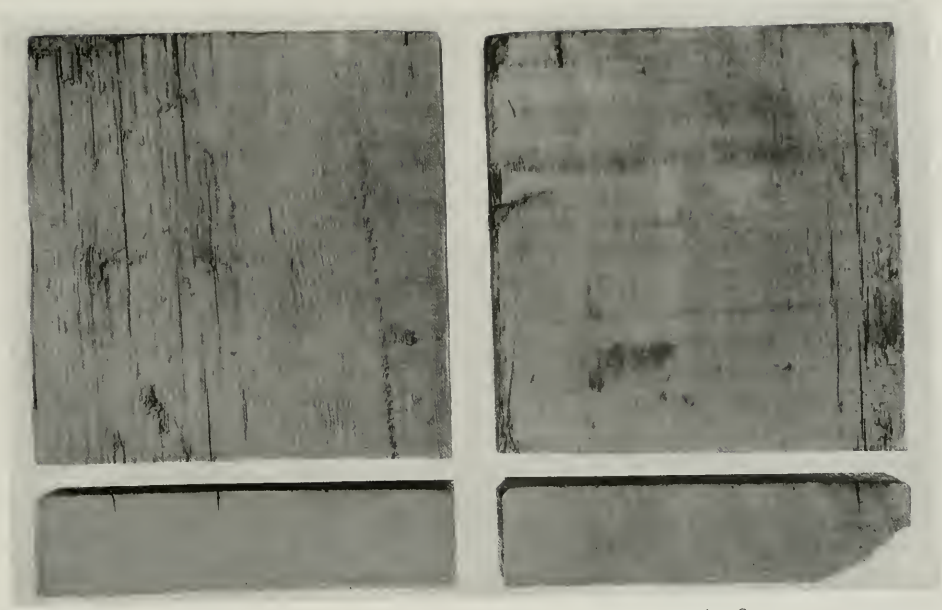
(2) "Redwood containing hot-water extractive in amounts below about 12 per cent is not lethal to the Protozoa in 60 days.

(3) "The differences in the amounts of the extractive, or of some definite chemical substance or substances of the wood and in the extractive, may account for the resistivity of redwood to termite attack when the extractive is abundant, and for the failure to resist when it is not abundant. The line of separation between these two conditions probably lies near 12 per cent. Presumably, wood containing not less than 12 per cent of extractive, is adequately termite resistant when and so long as it contains this amount of the hot-water-soluble extractive."

The Abbott A. Hanks Laboratory, San Francisco, obtained samples from representative redwood planks in the Islais Creek drain and determined the per cent of hot-water soluble extractive present in the wood. In obtaining these samples the laboratory reports: "Samples were taken from eight different zones between Oakdale Avenue and the outlet. Each sample consisted of three or more borings at separate points in a single board or section of a single board.

"The samples were selected by visual examination with the object of securing tests from boards of different physical conditions. By this method of selection seventeen samples were taken from fifteen boards, representing sound boards, decayed boards, medium or questionable boards, and boards affected at one end and apparently unaffected at the other end. These samples represent a cross section of

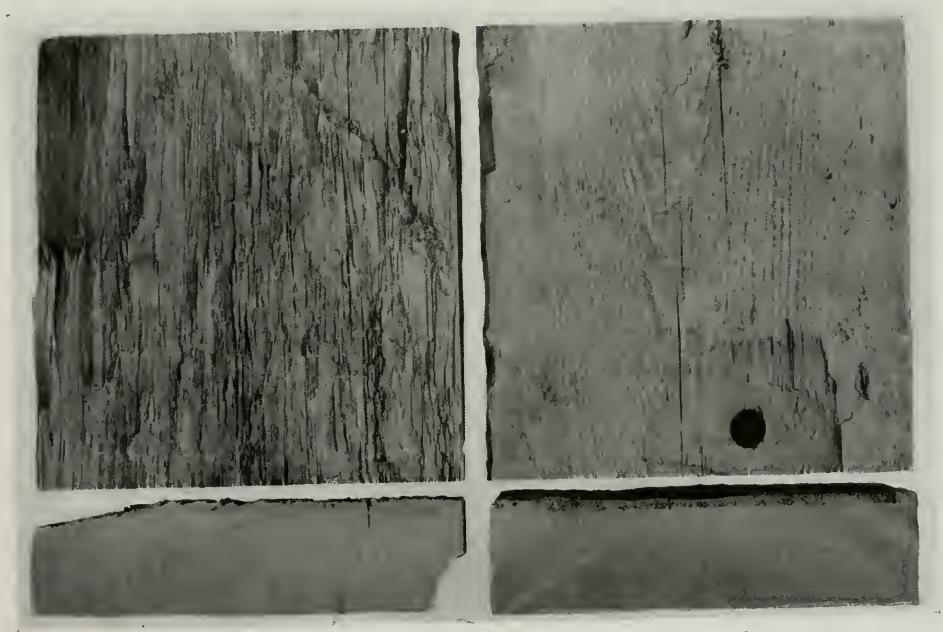
*Report of the Termite Investigations Committee published by the University of California Press—Charles A. Kofoid, Editor-in-Chief.



Specimen K.
Tested 17.91 Per Cent
Hot-Water-Soluble Extractive

Specimen G.
Tested 15.62 Per Cent
Hot-Water-Soluble Extractive

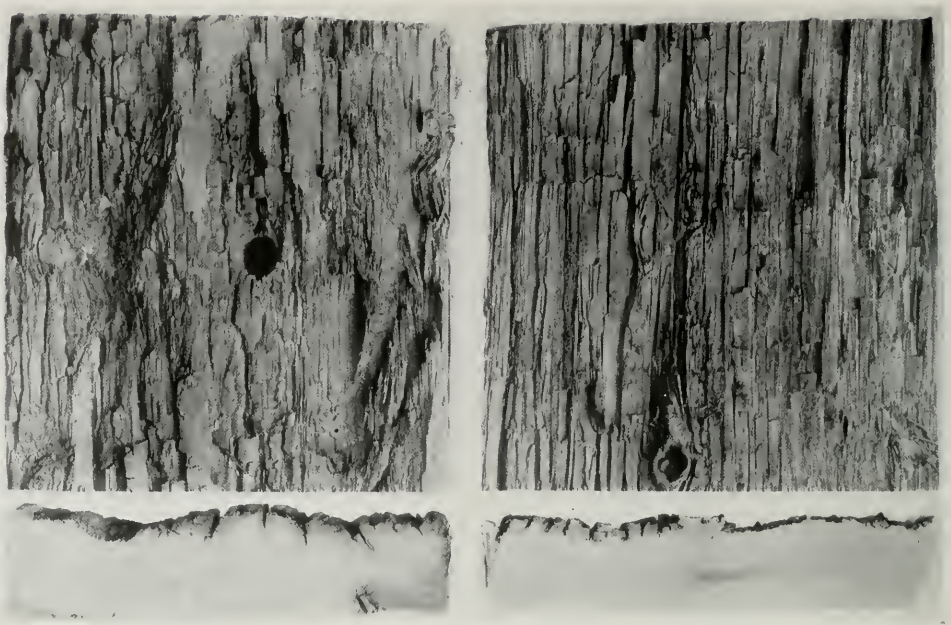
FIG. 4—THESE SPECIMENS CONTAINING 15.62 PER CENT AND 17.91 PER CENT OF HOT-WATER-SOLUBLE EXTRACTIVE SUCCESSFULLY RESISTED ATTACK BY FUNGI



Specimen M.
Tested 11.47 Per Cent
Hot-Water-Soluble Extractive

Specimen O.
Tested 13.46 Per Cent
Hot-Water-Soluble Extractive

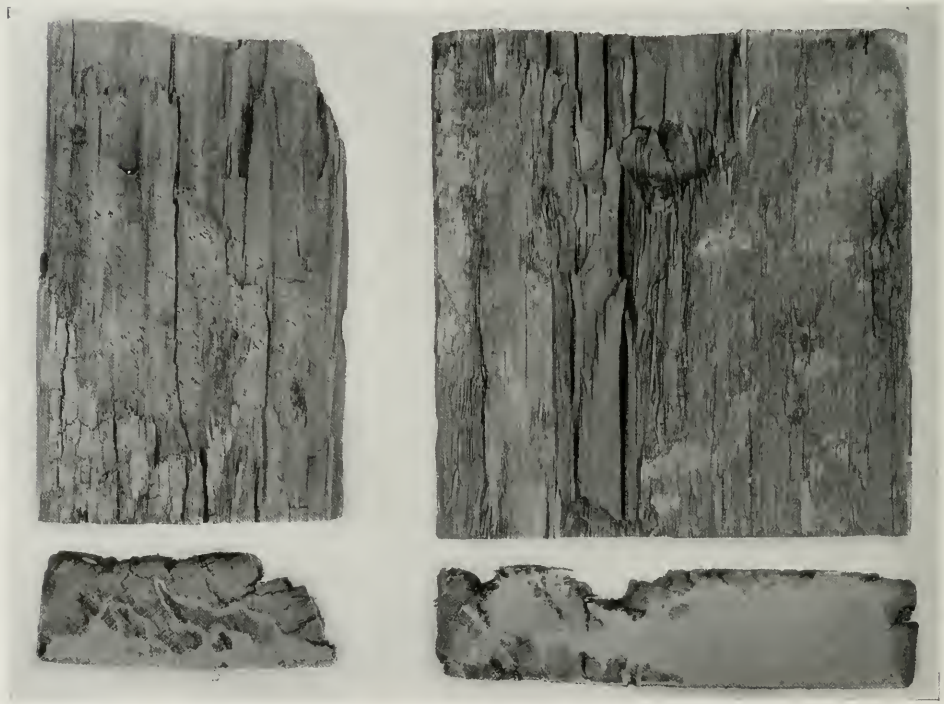
FIG. 5—THESE SPECIMENS CONTAINING 11.47 PER CENT AND 13.46 PER CENT OF HOT-WATER-SOLUBLE EXTRACTIVE HAVE RETARDED THE DESTRUCTIVE ATTACK BY FUNGI



Specimen A.
Tested 10.38 Per Cent
Hot-Water-Soluble Extractive

Specimen N.
Tested 10.53 Per Cent
Hot-Water-Soluble Extractive

FIG. 6—SPECIMEN CONTAINING LESS THAN ABOUT 11½ PER CENT OF HOT-WATER-SOLUBLE EXTRACTIVE DO NOT RESIST ATTACK BY FUNGI



Specimen D.
Tested 9.46 Per Cent
Hot-Water-Soluble Extractive

Specimen Q.
Tested 10.26 Per Cent
Hot-Water-Soluble Extractive

FIG. 7—REDWOOD CONTAINING LOW PERCENTAGES OF HOT-WATER-SOLUBLE EXTRACTIVE, THE NATURAL PRESERVATIVE, IS MORE READILY DESTROYED BY FUNGI

the present quality of the wood as judged by visual appearance." The results of the analysis are given in Table 1.

Durability of Redwood Values

Sherrard and Kurth of the Forest Products Laboratory in their studies on virgin redwood conclude: "It appears, therefore, that the durability of redwood will vary with the extractive distribution; the most durable redwood should be the heartwood of the butt log nearest the sapwood, the susceptibility to decay increasing toward the pith of the tree and toward the top * * *. The durability of redwood is attributed to the nature of the extractive and varies with extractive distribution."

The number of annular rings per inch does not appear to be an important factor in determining the durability in this instance. Sample N—see Fig. 6—had 51 annular rings per inch but was low in extractive content (10.53 per cent), and is classed as non-decay-resistant, while Sample G—see Fig. 4—had 50 annular rings per inch, was higher in extractive content (15.62 per cent), and is classed as decay-resistant. All this redwood was certified by an inspector of the California Redwood Association as "heart common redwood."

Table 1 leads to the following conclusions:

(a) Redwood containing hot-water extractive in amounts above about 15 per cent by dry weight of the wood is decay resistant. See Fig. 4.

(b) Redwood containing hot-water extractive in amounts above about 11½ per cent and under 15 per cent by dry weight of the wood is decay retardent. See Fig. 5.

(c) Redwood containing hot-water extractive in amounts below about 11 per cent by dry weight of the wood is not resistant to decay. See Figs. 6 and 7.

The above classification based upon data in Table 1 is subject to some overlapping. The work of Sherrard and Kurth in showing the distribution of the hot-water-soluble extractive in virgin growth redwood trees is an important aid to the architect or engineer in preparing a specification to insure that decay resisting materials are supplied when specified. The distribution of extractive in virgin-growth redwood as prepared by Sherrard and Kurth is represented graphically in Fig. 3. This graph presents the amounts of hot-water extractive throughout cross sections taken from six heights in a tree, the first cut being 3½ feet above the ground. The amount of extractive in sapwood as shown by the points at the extreme left is much smaller than in the heartwood immediately adjacent.

Data for Engineers Now Available

The durability of heart common redwood contains a variable factor in the absence of a definite specification establishing minimum percentages of the natural preservative. The hot-water-soluble extractive in redwood has been found to range from 5.45 to 28.23 per cent of the dry weight of the wood. Had pressure treated Douglas fir roof beams and girders been used and redwood planks containing not less than 15 per cent of extractive been specified, the failure would not have occurred.

In the past, engineers have not had data available with which to prepare a specification for the purchase of durable wood. There are many examples of redwood having given long service under adverse conditions, as well as instances of its failure. The destructive activities of termites have led to a searching inquiry into the decay and termite resisting qualities of many of the commercially available woods, with the result that information is now at hand for use in the preparation of specifications which will insure that durable woods are supplied.

THE SPANISH FEELING PREDOMINATES IN THE FOX-ARLINGTON THEATER, SANTA BARBARA

WILLIAM A. EDWARDS, ARCHITECT

Mortar Parts

As Related to Strength of Brickwork

by L. A. Palmer

THE weakest points in a wall of brick masonry are usually at the planes where bricks and mortars meet. There are two major causes of this condition. One is the difficulty of getting intimate contact between bricks and mortar. The other is lack of permanency of adhesion of mortar to bricks. The first difficulty is caused by the mortar's deficiency in water retaining capacity and the second by differential volume changes in the masonry due to cyclic expansion (on wetting) and shrinkage (on drying) of the hardened mortar. The properties, low water retaining capacity and high volume changes subsequent to hardening, are usually associated among mortars of high strength and outstanding hydraulic ingredients.

These weaknesses become apparent from flexural tests of brick beams and tension tests of bond (adhesion) between mortars and bricks. Compression tests of brick piers usually do not reveal such structural defects.

There is nothing to be gained by specifying a minimum tensile strength of mortar if it does not have properties that assure good distribution or extent of adhesion, a condition that is more dependent on the mortar having high water retaining capacity and low volume changes subsequent to hardening than on mortar strength alone. However, the importance of masonry strength must not be overlooked and in so far as mortar strength contributes to the strength of masonry, it is a very necessary property. The interdependency of the two things, mortar strength and masonry strength, is poorly understood since the results of tests, wherein the condition for getting good bond distribution are intentionally made most favorable, do not usually have any practical bearing on the subject.

Consider for example some laboratory data obtained with bricks and mortars of the kind that were incorporated in buildings that were damaged in the earthquake in Southern California, March 10, 1933. These data were obtained at the University of California and notes in the tables (easily overlooked) state that "masonry specimens *were laid wet*, sprinkled twice daily for 14 days, then stored dry until test." It would be most enlightening to compare these data with other results, which should also have been obtained by setting the bricks dry, a procedure that is commonly

Editor's Note—Mr. Palmer, the author, is identified with the construction department of the National Lime Association. He was formerly research associate of the U. S. Bureau of Standards and is a recognized authority on the subject under discussion.

followed in the field. Moreover Weather Bureau reports do not indicate that brickwork in Southern California is wetted twice daily. Wetting porous bricks in the laboratory to reduce their suction when laying them with portland cement mortar is a procedure that has been used again and again. A departure from this beaten path leads to results which really throw some light on the behavior of brick masonry during an earthquake. Such a departure has been made in at least one laboratory and an account of the results may be found in National Bureau of Standards Research Paper No. 683, "The Properties of Mortars and Bricks and Their Relation to Bond."

Have High Range of Absorption

The tabulated data reported by Professor R. E. Davis* of the University of California indicate that the bricks produced and used in Southern California have rates of absorption that range from high to very high as compared to most bricks. This is in good agreement with data reported by McBurney and Lovewell in A.S.T.M. Proceedings, Vol. 33, 193, Part II, page 636.

In an article, entitled "Water-tight Brick Masonry," by Dr. F. O. Anderegg, which was published in the September 1931 issue of the Architectural Record, there are certain statements which are in very good agreement with the results obtained at the National Bureau of Standards. These are the following: "The *rate* at which moisture is removed *from* the mortar *by* the brick has a *marked influence on the bond strength and water-tightness of the wall.* Examination of the joints in the experimental panels and brick beams, and in numerous buildings where trouble has occurred, has revealed generally the existence of *numerous depressions in the surface of the mortar next the brick, through which moisture readily penetrates and which also reduce the bond strength.*"

"The greater the amount of portland cement, the greater the compressive strength, values ranging from 200 pounds per square inch for pure lime mortars to nearly 5000 pounds for straight cement mortar. The flexural or bond strength, however, does not increase nearly so fast, the modulus of rupture ranging from about 15 to 100 lbs. per square inch. However, *the high cement mortars are brittle, being readily detached from the brick by impact.* High lime mortars on the other hand, are much more flexible and seem to undergo a tearing action under load, *indicating some ability to adjust themselves to stresses.*"

In Table III of this publication by F. O. Anderegg, it is noted that for bricks of high rates of absorption, (above 10% during 10 minutes) he recommends a mortar mixture of 2 volumes of lime putty or hydrate to 1 volume of portland cement to 9 volumes of sand for summer construction. Where resistance to lateral stresses, such as earthquake shock, is of prime importance the relative proportion of sand can and should be reduced to 7 or 8 volumes, keeping the lime-cement ratio of 2 to 1 by volume.

Over-sanded Mortars

It is noted in Table I of the report by Professor Davis that practically all of the mortars which he took from damaged buildings, in the earthquake area were over sanded. The plastic and adhesive properties of mortar containing lime are lost if too much sand is used. Clean sand of medium or coarse grading does not retain water on a porous base and the greater the proportion of such sand, the less the water retaining capacity of the mortar. The suction of dry porous bricks on a hot day is well known to most masons and the difficulties in using a mortar deficient in water retain-

*Report addressed to members of A.S.T.M. Committee C-12 on masonry mortar, May 31, 1933

ing capacity, characteristic of dense portland cement mortars are practically insurmountable under these conditions.

Figure 1 is a typical illustration of a "mortar pancake" taken from between two bricks of about 12 per cent total absorption. The bricks were laid dry with 1 portland cement: 3 sand mortar of normal consistency.

Figure 2 illustrates typical results obtained with this same mortar and type of brick when the bricks were 50 per cent saturated (absorption about 6 per cent) when laid. Note the unbonded areas.

Figure 3 probably depicts the optimum results obtainable by wetting porous bricks when laying them with dense portland cement mortar. In this case the bricks were so wetted (15 minutes total immersion) that their suction was practically negligible. The cement mortar, of normal flow or consistency, tended to segregate when spread on the wet surface (characteristic of mortars of low water retaining capacity). Water pockets formed on the surface of the mortar bed as indicated by the depressions in the mortar joint and the unbonded areas on the flat-side surface of the brick placed atop the joint. With conditions as typified by Fig. 3, the tensile strength may be fairly good initially, but it does not remain so. Volume changes in hardened cement mortar destroy the bond if it is initially poor in ex-

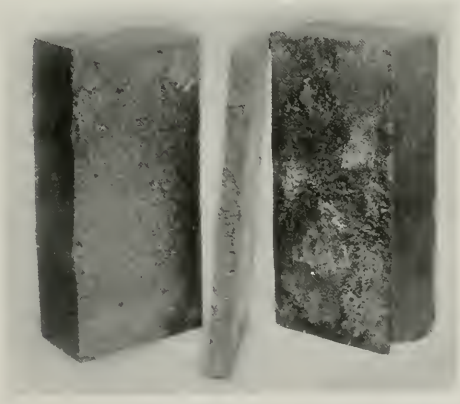


Figure 1 — Poor bond distribution obtained with unadaptable mortar Dry porous bricks laid with portland cement mortar deficient in water retaining capacity.

Figure 2—Same bricks and mortar as illustrated in Figure 1. In this case, bricks were 50 per cent saturated when laid. Note underbonded areas on brick surface.

Figure 3—Same bricks, same mortar as illustrated in Figures 1 and 2. In this case, the bricks were almost completely saturated (too wet) when laid. Figures 1, 2 and 3 illustrate the fact that given a poorly adaptable mortar, wetting bricks does not solve the problem of getting good extent of bond.

tent. In this case, the bricks separated before a test was made due to volume changes in the hardened mortar.

Erratic Results from Wetting

In wetting bricks on the job, the results as shown by the illustrations, are erratic and of varying degree. It is far better to use a mortar of such high water retaining capacity (increasing the proportion of lime and avoiding oversanding) that it is unnecessary to ever wet any bricks. With this procedure, the slow withdrawal of the moisture from the mortar, in intimate contact at all points with the brick, greatly increases both the tensile mortar and the tensile bond strength. Under these conditions good extent of bond is promoted and unbonded areas of the brick surfaces in contact with mortar cannot be found when the assemblages are tested in tension or flexure.

The following are excerpts from an article published in Rock Products, issue of December 5, 1931, by F. O. Anderegg, "Analysis of Properties Desired in Masonry Cements."

"*The most important strength characteristic of masonry walls is the bond between the unit and the mortar.* The lime usually has a greater bond than mortar strength, while the straight cement mortar behaves in just the opposite way, unless extraordinary pains are taken in laying."

Following the investigation of the materials of buildings damaged in the Southern California earthquake, certain suggested requirements were presented to members of Committee C-12 on Mortars for Unit Masonry of the American Society for Testing Materials. It was proposed that masonry cement mortar briquettes have a tensile strength of not less than 250 lbs. per square inch at 28 days and a compressive strength of not less than 1500 lbs. per square inch at the same age. It was further proposed that the tensile bond strength of the masonry be not less than 40 lbs. per square inch at 28 days.

In these suggested requirements it was no doubt assumed that high mortar strength is a guarantee of high masonry strength, no mortar property other than strength being mentioned. It was further assumed that the strength of damp cured mortar test specimens is a direct index to that of the same mortars between bricks in a warm, dry climate.

Strength of Mortar

An analysis of the data, supplementary to National Bureau of Standards Research Paper No. 683 (obtained upon application to Bureau of Standards, Washington, D. C.) warrants the following statements:

1. Mortar specimens (1:3 by volume), of normal consistency, made with the 12 masonry cements included in the Bureau of Standards investigation gave the following results, in pounds per square inch, at 3 months:

	Maximum	*Minimum*
Transverse strength	313	109
Compressive strength	640	100
Tensile bond strength	45.6	0.1

These 12 masonry cements included 2 modified portland cements, 5 modified natural cements, 1 hydraulic lime, 1 mixture of slag and portland cement, 1 mixture of slag and hydrated lime, 1 mixture of hydrated lime and portland cement and 1 natural cement.

2. Not one of these 12 representative masonry cements would meet the suggested requirements for tensile and compressive strengths.

3. The bond strength, both in tension and in flexure, was weaker on the average, with the strongest masonry cement mortars used in assemblage tests than the bond and

flexure strengths obtained with some of the weaker masonry cement mortars.

4. Adhesive strengths considerably exceeding 40 lbs. per square inch were obtained in many instances at 3 months with mortars that had less than 400 lbs. per square inch compressive strength at 3 months.

5. The compressive and transverse strengths of only two of the 12 masonry cement mortars were comparable to those of the 1:1:6 lime-portland cement mortar mixtures. The average strengths of the 2 lime: 1 portland cement: 9 sand mortars, were equal to or greater than that of 6 of the 12 masonry cements.

6. With porous bricks set dry, the lowest values for strength of bond in tension were obtained with 1 portland cement:3 sand plus 0.15 lime and with 1 portland cement:3 sand mortars. This statement applies to soft-mud, sand struck, dry-press and stiff-mud, side-cut bricks all exceeding more or less what is considered as a moderate rate of absorption (40 grams of water absorbed in 1 minute through 30 square inches of the surface of the bone dry bricks).

7. With all porous bricks *set wet*, the strength of brick beams in flexure at 3 months was greater on the average with 1:1:6 lime-portland cement mortar mixtures than with 1 portland cement:3 sand mortar or with 1 portland cement:3 sand mortar plus 0.15 lime (Table 13, National Bureau of Standards Research Paper No. 683).

8. The compressive and transverse strengths at 3 months of the 1:1:6 mortars were, however, only about 1/3 of the corresponding values obtained with the portland cement mortar. This indicates the importance of properties other than mortar strength as affecting the strength of masonry.

9. The strength of bond in tension with 2 lime:1 portland cement:9 sand mortar and with mortars richer than this in lime, was greater with the 3 types of porous bricks set dry than with the same bricks set wet. Furthermore, the extent of bond was ideal in all cases and under all conditions with mortars richer in lime than the 1:1:6 mix, thus showing that if the mortar is sufficiently retentive of water, it is unnecessary to wet even the most rapidly absorbing bricks.

10. The strength of bond in tension with the two most porous bricks (Nos. 1 and 6 in the compendium of data) set dry was greater with the 2 lime:1 portland cement:9 sand mortar mixture than with portland cement mortar either with or without the addition of 15 per cent (by volume of the cement) of hydrated lime.

11. The flexural strength of brick beams at 3 months, made with the 2 lime:1 portland cement:9 sand mortar was approximately the same as that of the beams made with portland cement mortar when very impervious bricks (Nos. 3 and 5 of the compendium of data) were used.

Observations Substantiated

It is interesting to note the agreement of these observations with those of others. For instance, in Table II of Anderegg's publication in the Architectural Record, the modulus of rupture of brick beams made with porous bricks ("dipped in water") and 2 lime:1 portland cement:9 sand (by volume) mortar is given as 25 lbs. per square inch and that of beams with the same bricks and 1 lime:2 portland cement: 6 sand is given as 15 lbs. per square inch. Moreover, the average modulus of rupture obtained with 5 makes of bricks (included both low and high absorption) of the 1 lime:2 portland cement:6 sand is given in this table as 51 lbs. per square inch. The corresponding average for the 2 lime:1 portland cement:9 sand mortar is 37 lbs. per square inch. Excluding the data as obtained with furrowed joints (not to be

recommended) the averages for the two mortars of Anderegg's table II are 45 and 36½ lbs. per square inch for the 1 lime:2 portland cement:6 sand and 2 lime:1 portland cement:9 sand mortars, respectively. The corresponding standard deviations (all bricks, both furrowed and full joints) for these two mortars are, according to computations of Anderegg's data, 20.5 and 7.3, indicating a greater degree of adaptability (less variability) with the mortar richer in lime which accounts for its better reproductibility of results when the two mortars were used with a diversity of bricks.

Again, some interesting results are given on page 67 of the publication, "Impervious Brick Masonry," by the Alton Brick Company, St. Louis, Missouri, (1933). With a brick of low to moderate absorption, the modulus of rupture of assemblages with 1 portland cement:3 sand mortar was found to be 41.9 lbs. per sq. in., as compared to a corresponding value of 79.7 lbs. per sq. in. with the widely used 1:1:6 mortar mixture.

In "A Treatise on Masonry Construction," by Ira O. Baker, page 93, it is indicated that the ratio of tensile to adhesive strength of portland cement mortar varies from 5.1 to 9.1. This means a bonding efficiency of from 11 to 20 per cent. The average bonding efficiency of the portland cement mortar in the National Bureau of Standards tests was about 12 per cent, whereas that of the 2 lime:1 portland cement:9 sand mortar mixtures averaged 26 per cent, with a maximum of 48 per cent with one type of brick. The corresponding maximum bonding efficiency for portland cement mortar was 17.2 per cent, bonding efficiency being computed by dividing the tensile bond strength by the transverse mortar strength and expressing the result as per cent.

The minimum tensile bond strength for Southern California has been suggested as 40 lbs. per square inch. The suggested minimum tensile strength of mortar is 250 lbs. per sq. in. (both values at 28 days). With an average bonding efficiency of 12 per cent as obtained with portland cement mortar and a diversity of building bricks, set both wet and dry, the average bond strength would be *10 lbs. below the minimum requirement* if the tensile strength of portland cement mortar is 250 lbs. per square inch. This is considering *average* values. With porous bricks, the tensile bond strength with portland cement mortar is practically certain to be even less because the distribution of bond is bound to be poor with this mortar in actual buildings whether the bricks are or are not wetted.

Variability of Bond Strength

After all, the important consideration in brick construction in any earthquake district is not what tensile bond strength *can* be developed under ideal conditions in the laboratory by wetting bricks, carefully filling all joints and wetting test specimens daily to increase the hydration of cement with a consequent rapid increase in its strength. The thing about which we are all very much concerned is the *degree of variability of bond strength that normally exists* when different bricks are laid in walls by different workmen. To secure the necessary element of safety under these conditions, a mortar of considerable adaptability to different types of units is absolutely essential. From the standpoint of flexural strength of brick masonry, mortar adaptability is fully as necessary as mortar strength. The two properties must be combined or associated in whatever mortars are used.

Mortar adaptability improves the extent or distribution of adhesion and mortar strength improves within limits, the intensity of adhesion. Adaptability is almost completely sacrificed when mortar strength alone is sought.

Noise

by W. O. Osbon

ENGINEERING history was recently made as a result of diagnosing the noise of an airplane in flight, speeding trains, street cars and buses. The actual tests were made in a high speed airliner of the General Aviation Manufacturing Corporation, Pullmans and coaches of Pennsylvania Railroad trains, street cars of the Pittsburgh Railways Company, and in buses of the Pittsburgh Motor Coach Company, by means of an ingenious portable noise analyzer developed in Westinghouse Research Laboratories.

Although airliners, railroad coaches and Pullmans have often been tested for loudness or total noise, never before have these noises been analyzed to find out what percentage of the noise is in the low frequency band, how much is in the high frequency band, at what frequencies peaks of noise occur and other important information that will enable engineers to eliminate causes of the noise at their source.

In making the tests, total noise readings and analysis reading were taken for various rates of speed and for various conditions, such as rough air and smooth air in the case of the plane; terminal track, open country track and tunnels in the train tests; paved street city track and open country track for the street car; and suburban boulevard and downtown city traffic for the bus.

The total loudness readings checked the findings of other investigators who have studied noise from that standpoint. Stated in decibels, the standard unit of sound, results were:

Media	Speed Mph.	Loudness in Decibels Min.	Max.
Railroad Pullman	45	68	74
DeLuxe Transcontinental Bus	40	74	79
Railroad Coach	35	75	80
Transport Airliner*	190	77	81
City Bus	30	78	84
Street car* special gears	35	81	83
Street car** Conventional type	35	85	88

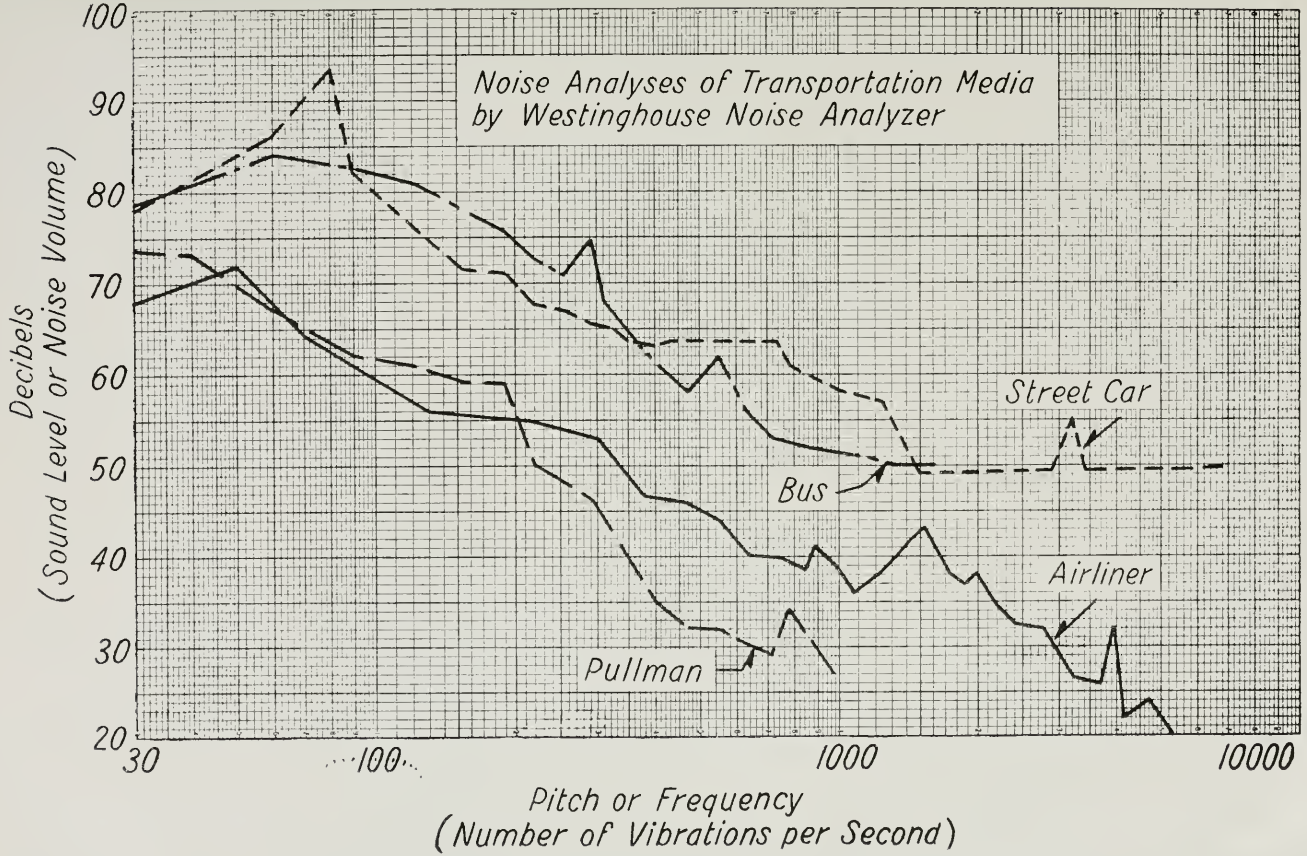
* Unfinished plane, sound insulation incomplete

** Experimental car, helical cut gears

That the total loudness readings do not tell the whole story is evident when they are compared with the results of the analysis. The accompanying chart gives a graphic picture of the noise analyses of four vehicles: (1) a conventional low floor type of Pittsburgh Railways Company street car, (2) a Fageol Twin Coach of the Pittsburgh Motor Coach Company, (3) a GA-43 airliner of the General Aviation Manufacturing Corporation, and (4) a Pullman parlor on a Pennsylvania Railroad train.

Low Frequencies More Intense

The chart shows that in each of the four vehicles, the low frequency sources of noise are much more intense than the high frequency sources. In the cases of the air-liner and the Pullman the high frequency noises dropped below 25 decibels which is equivalent to the noise of a cat purring.


Noise Analyses of Transportation Media
by Westinghouse Noise Analyzer
Decibels
(Sound Level or Noise Volume)
100
90
80
70
60
50
40
30
20
30
100
1000
10000
Pitch or Frequency
(Number of Vibrations per Second)
Street Car
Bus
Airliner
Pullman

In the cases of the street car and bus, the intensity curves, although higher in value, follow a pattern similar to those of the airliner and Pullman with a downward slope through the low and medium frequencies, but where the curves for the latter two continue to decline in the high frequency band, the street car and bus curves flatten out. Osbon attributes this fact to the presence of high frequency gear noises in the street car to window rattle and similar impact noises in the bus.

The numerous sharp peaks which occur in each of the curves indicate sources of loud noise at frequencies corresponding to the peaks. By tracing the causes of such noise sources and eliminating as much as possible the causes, engineers may be able to quiet the total noise.

The noise analyzer consists of three small leather covered cases. One case contains a noise motor, the second, the noise analyzer, and the third, a microphone and batteries.

The noise analyzer is not nearly as well known as the noise motor which measures only the total noise or loudness. The noise meter gives noise ratings of boiler factories, offices, gunfire, rustling leaves, and the like and informs the world how much noisier Times Square in New York City is than the corner of State and Madison Streets, "the world's busiest corner", in Chicago's loop.

Thirty-six passenger twin coach used for noise analysis.

Although not as spectacular and therefore not as well known to the public, the noise analyzer accomplishes a much more important work and its findings will have an important influence on the design of machinery and merchanical equipment in the future.

Analyzer Quiets Motors

Already the noise analyzer has been of material assistance in reducing the noise of electric motors. When a motor is exposed to the supersensitive ear of the analyzer, engineers are able to find out how much of the total noise is caused by unbalance of the rotor, how much by the commutator bars, what part by slots in the rotor and what part by gear noises. It also enables them

One of the cars provided by the Pittsburgh Railways Co. for sound test

to trace the causes of the noise so that they can eliminate these causes at their source.

Housewives may be interested in knowing that the analyzer has already played an important part in giving them quiet electric refrigerators, washers, ironers, vacuum cleaners, and other motor driven appliances. In all these cases, the analyzer has been invaluable in eliminating or minimizing noise elements caused by the motor parts, fan assembly, gear drive and similar parts.

It is a well established fact that sound plays a very important part in the health and happiness of human beings; that sounds made up of discords — noise — have a harmful influence upon health, happiness, and efficiency.

Recent investigations by a group of psychologists reveal the fact that the pitch, complexity, and variation of complexity of a noise are much more important factors than mere loudness or intensity in determining the harmful effect of noise upon production in industrial and office tasks.

This scientific recognition of the importance of noise characteristics emphasizes the need for and establishes the place of the noise analyzer in man's unceasing fight to reduce noise.

Looks Like a Radio Set

The analyzer is similar in appearance to a radio set. On its panel are switches, dials and meters; inside are four vacuum tubes, condensers, transformers and similar apparatus. All this equipment is compactly built into a leather covered case. To understand this operation a knowledge of the principles of sound and vibration are necessary.

Sound is the result of an object vibrating within

Loading noise analyzing equipment on the GA-43, new high speed air liner of the General Aviation Corporation.

the audible range. The vibrating object causes alternate expansions and contractions of the medium surrounding the object, and these pressure changes are transmitted in waves by the medium to all points in the vicinity of the sound source. Thus a sound wave exerts a definite pressure on any object, such as a human ear drum, located in the sound field. As a standard, scientists have agreed upon a barely audible sound of 1000 vibrations per second. Such a sound presses upon each square centimeter of an average ear drum with a force of 1/5000 of a dyne, the dyne being the scientist's unit of force. Expressed in ordinary units this sound pressure is equivalent to about three billionths of a pound per square inch.

How noise is analyzed during the flight of airplanes. W. O. Osbon, engineer at the left, is conducting a noise analysis on the GA-43, new high speed air liner of the General Aviation Corporation.

There is a curious relationship between the frequency (or the number of vibrations per second) of sound, the intensity of its source, its loudness and the pressure on the ear drum. Osbon explains that if two sounds are of equal loudness, the sound having the lower frequency will have a greater intensity at its source and will exert the greater pressure on the ear-drum. For instance if a piano note "C", two octaves below middle "C", and the "C" two octaves above middle "C", 64 and 1024 vibrations per second respectively, are struck so easily that both of them are barely audible, the lower "C" will emit 90,000 times as much energy and exert 300 times as much pressure on the ear-drum as the higher "C".

As sound increases in loudness, the pressure exerted upon the eardrum increases tremendously. For example, a sound of 1000 vibrations per second, when barely audible or, as the scientist would say, at the threshold of hearing, exerts upon the eardrum a force of only 1/5000 dynes per square centimeter (1/6 square inch, approximately) but this sound, when increased in loudness to the threshold of pain, exerts a force of 3,000 dynes per square centimeter. Respect for the human ear grows with the realization that it functions through such an extreme range of sound intensity and pressure,—in this case the loud sound exerts 15,000,000 times as much pressure on the eardrum as the quiet sound does, while the sound energy increases in the staggering ratio of 225 million million (225,000,000,000,000) times!

Based on Superheterodyne Principle

The analyzer differs from the superheterodyne radio circuit only in its intermediate circuit. Where the radio has a tuned electrical filter, the analyzer has a mechanical filter.

Operating the analyzer is similar to tuning-in a station on a superheterodyne radio set. The radio listener turns his dial to select different stations; the sound engineer turns the analyzer's dial to "tune-in" the different sound elements that make up a noise.

Each noise element's frequency is balanced against the mechanical filter's known frequency, 7000 vibrations per second, by the apparatus and the frequency and corresponding intensity are read on the instrument's dials.

As the sound engineer sweeps over the analyzer's frequency range, the decibel dial will indi-

cate loud noises at certain frequencies. These noises are the sources of the total noise of the machinery being tested. Knowing the frequencies of the individual noise sources, it is a relatively simple task to discover their cause.

HISTORIC AMERICAN BUILDING SURVEY

Following is the official list of completed records of the Survey in California:*

Alba, San Joaquin County.

Miscellaneous photos only: Farm House.

Albion, Mendocino County.

Miscellaneous photos only: General View.

Amador City, Amador County.

Miscellaneous photos only: Amador Hotel, Imperial Hotel, Buildings on Highway, House and Mine.

Anaheim , Orange County.

S. A. Sheffield House, 37-13, 5p. Pioneer House, 37-14, 2p.

Angels Camp, Calaveras County.

Miscellaneous photos only: Stone House, House, Store.

(Near) Angels Camp, Calaveras County.

Miscellaneous photos only: Stone-Adobe Ruin; Miscellaneous Buildings, Farm House.

Arcata, Humboldt County.

Miscellaneous photos only: House at 14th and J Streets. Nixon House.

Auburn, Placer County.

Miscellaneous photos only: Intersection of Grass Valley and Sacramento Roads, Buildings in Old Town, Chinese Section, House in Old Town, Ruins in Old Town.

Bridgeport, Nevada County.

Miscellaneous photos only: Bridge over Yuba River.

Bridgeville, Humboldt County.

Miscellaneous photos only: General View.

Carson Hill, Calaveras County.

Miscellaneous photos only: House.

Coloma, El Dorado County.

Miscellaneous photos only: Post Office, Barn, House, Stone Ruins, Ruins on Shingle Spring Road.

Columbia, Tuolumne County.

Gravestones, 38-11, 1s, 14p.

Miscellaneous photos only: Wells Fargo and Company Building, Old Trading Post, Solari's Building, Pioneer Saloon, City Hotel, Store, St. Anne's Church.

Dobins, Yuba County.

Miscellaneous photos only: Hotel.

Downieville, Sierra County.

Miscellaneous photos only: West Portion, Main Street, Court House, I.O.O.F. Hall; Church on Sierra Road, Catholic Church, St. Charles Hotel, Major Downie's House, Houses behind Courthouse, Sierra City Road, Houses on Sierra City Road.

(Near) Downieville, Sierra County.

Miscellaneous photos only: Hydraulic Mine.

El Dorado, El Dorado County.

Miscellaneous photos only: Buildings on Highway; Ruined Store.

Elk, Mendocino County.

Miscellaneous photos only: General View.

Escalon, San Joaquin County.

Miscellaneous photos only: Jones House.

Eureka, Humboldt County.

Miscellaneous photos only: Lindsay House, Stokes House, House at 314 H Street, Hustes-Hanna House.

Folsom, Sacramento County.

Miscellaneous photos only: Wells Fargo and Company Building, Episcopal Church, House, Methodist Episcopal Church.

(Near) Fort Bragg, Mendocino County.

Miscellaneous photos only: Abandoned School.

Fort Ross, Sonoma County.

Russian Chapel, 38-10, 6s, 7p.

Miscellaneous photos only: Russian Block House, Russian Barracks.

Grass Valley, Nevada County.

Miscellaneous photos only: Watt House, House.

(Near) Grass Valley, Nevada County.

Miscellaneous photos only: Farm House.

Jackson, Amador County.

Miscellaneous photos only: Brick House, Serbian Church, Hotel.

(Near) Jolon, Monterey County.

Mission San Antonio De Padua, 38-2, 17s, 10p.

Miscellaneous photos only: Roth Ranch.

Knights Ferry, Stanislaus County.

The Miller's House, 38-8, 3s, 3p.

*Method of listing subjects—Name of Survey; Survey Number; Number of Sheets of Measured Drawings, (s); Number of Photographs (p).

Miscellaneous photos only: Bridge, Mill and Warehouse, Schell House, Jail, Fire House.

Long Beach, Los Angeles County.

La Casa De Los Cerritos, 37-12, 12p.

Los Angeles, Los Angeles County.

Plaza Church, 37-1, 2p.

La Casa Avila, 37-2, 3s, 2p.

La Casa De Pelanconi, 37-3, 5s, 2p.

Masonic Temple, 37-1, 1p.

Monastary of Mission San Fernando Rey de Espana, 37-5, 7s, 10p.

Mad River, Humboldt County.

Miscellaneous photos only: Log Cabin on Erickson Ranch, Erickson Ranch House.

Marysville, Yuba County.

Miscellaneous photos only: Presbyterian Church, Houses on C Street near 6th.

(Near) Marysville, Yuba County.

Miscellaneous photos only: Oregon House, Marysville-Downieville Road.

(Near) Melones, Calaveras County.

Miscellaneous photos only: Barn.

Mendocino City, Mendocino County.

Miscellaneous photos only: Main Street.

Mokelumne Hill, Calaveras County.

Miscellaneous photos only: I.O.O.F. Building, Church, Ruined Store, Stone Ruins, Leger Hotel, Store and Post Office.

Monterey, Monterey County.

San Carlos Presidio Church, 38-6, 28s, 17p.

Nashville, El Dorado County.

Miscellaneous photos only: House, Barn.

Nevada City, Nevada County.

Miscellaneous photos only: Store, Firehouse.

North San Juan, Nevada County.

Miscellaneous photos only: House, Store, Main Street, Church.

(Near) Olema, Marin County.

Miscellaneous photos only: Lime Kilns.

Oleta, Amador County.

Miscellaneous photos only: Barn.

Pomona, Los Angeles County.

La Casa de Ygnacio Palomares, 37-25, 3p.

(Near) Petaluma, Sonoma County.

Vallejo Adobe, 38-1, 9s, 11p.

One Room Adobe, 38-9, 1s, 1p.

Pilot Hill, El Dorado County.

Miscellaneous photos only: A. J. Biley Road House.

Piru, Ventura County.

La Casa Del Rancho Camulos, 37-15, 17p.

Placerville, El Dorado County.

Miscellaneous photos only: California Automobile Association Building, J. Zeisz Building, Bedford Inn, Community Church and Adjoining Building, House—No. 50 Benham Street, House of Judge Thompson, House on Bedford Street, House on Main Street, House, House on Coloma Road.

Plymouth, Amador County.

Miscellaneous photos only: House.

(Near) Salinas, Monterey County.

Miscellaneous photos only: Sherwood Ranch.

San Francisco, San Francisco County.

Miscellaneous photos only: Building at 802 Montgomery Street, Buildings on South Side Jackson Street, between Montgomery and Sansome Streets, Buildings on East Side Montgomery Street, between Washington and Jackson Streets, Hotaling Building, Fort Winfield (Presidio).

San Gabriel, Los Angeles County.

Mission San Gabriel Arcangel, 37-8, 7p.

Purcell House, 37-9, 3p.

San Juan Bautista, San Benito County.

Mission San Juan Bautista, 38-4, 38s, 22p.

House of Mexican Period, 38-5, 3s, 2p.

The Plaza, 38-12, 1s.

Miscellaneous photos only: Castro House Plaza.

San Miguel, Monterey County.

Miscellaneous photos only: Mission San Miguel Arcangel.

(Near) San Miguel, Monterey County.

Miscellaneous photos only: Caledonia Inn.

Santa Barbara, Santa Barbara County.

Yorba-Abadie House, 37-33, 4s, 2p.

The Miranda House, 37-35, 4s, 1p.

"El Cuartel," 37-36, 3s, 1p.

Home of Mrs. A. L. M. Vhay, 37-37, 4s, 10p.

(Near) Santa Rosa, Sonoma County.

Miscellaneous photos only: Vallejo House.

Shasta, Shasta County.

Miscellaneous photos only: Main Street, Old Court House, Masonic Hall and Store Building, Foster House, Dr. Shurtleff House, Bystle House,

Shingle Springs, El Dorado County.

Miscellaneous photos only: Store.

Sierra City, Sierra County.

Miscellaneous photos only: Old Mine, Main Street, Houses on Main Street, Wells Fargo and Company Building.

Sonoma, Sonoma County.

Miscellaneous photos only: Mission San Francisco Solano de Sonoma, Blue Wing Inn, Adler House, Vallejo House, Vallejo Chalet.

Sonora, Tuolumne County.

Gravestones, 38-11, 1s, 14p.

Miscellaneous photos only: St. Patrick's Church, McCormick House, Cady House, Dorsey House, Italia Hotel, House at 1100

[Please turn to Column 2, Page 61]

« « « « With the Architects » » » »

OLYMPIC CLUB IMPROVEMENTS

Extensive alterations and additions to the Olympic Club, San Francisco, are under way from plans by Douglas D. Stone and John Baur, architects. Contracts have been let for all the work which is being supervised by Lindgren & Swinerton, Inc. Pacific Manufacturing Company is doing the mill work and Guilfoy Cornice Works has the sheet metal work. More than $200,000 will be expended on the improvements.

BERKELEY ARCHITECT BUSY

Fred Confer, 2812 Russell Street, Berkeley, reports quite a few inquiries from prospective builders who have been inspired by the new Federal Housing Act. New homes and modernization of present homes are contemplated. Mr. Confer has taken bids for a house in Oakmore Highlands for C. C. Lotz and he has completed drawings for a $12,000 residence on Arch Street, Berkeley, for K. G. Schwegler.

PRINTING PLANT

Plans have been completed in the office of Will P. Day, 405 Montgomery Street, San Francisco, for a reinforced concrete printing plant at 12th and Van Ness Avenue, San Francisco, for the Recorder Printing & Publishing Company. Plant and equipment will represent an outlay of $150,000.

NAPA COUNTY RESIDENCE

Arthur S. Dudman, 67 Bungalow Avenue, San Rafael, has completed plans for an $8,500 residence to be built in Napa for J. O. Sperry. House will have seven rooms, two baths, double garage, hot air heating and hardwood floors.

SAN JOSE AUDITORIUM

Plans have been revised for the $400,000 municipal auditorium at San Jose and new bids are being taken. Binder & Curtis, San Jose, are the architects and Leland & Haley of San Francisco are the mechanical engineers.

DEPARTMENT STORE

The engineering department of Montgomery Ward & Company is preparing plans for a two-story, basement and mezzanine department store building to be erected at 9th and K Streets, Sacramento, on the property of the Hagelstein Estate. Montgomery Ward & Company are the lessees. The estimated cost is $300,000.

EXHIBITION OF PHOTOGRAPHS

An interesting exhibition of photographs of historic homes and places in the California gold country, is being held this month at the De Young Museum, Golden Gate Park. The pictures are the work of Roger Sturtevant of San Francisco who took them in connection with the recent Historic American Buildings Survey, National Park Service, Department of the Interior.

STAINED GLASS DESIGNER PASSES

Walter H. Judson, nationally known designer and manufacturer of stained glass, and founder of the Judson Studios at 200 S. Avenue 66, Los Angeles, died at Glendale Research Hospital, September 4, where he had undergone a surgical operation for a stomach ailment. He was 62 years of age.

COURT HOUSE ADDITION

A bond election for $146,000 will be held in San Mateo County in November, the proceeds to be used for a three-story addition to the Court House, Redwood City. Preliminary plans have been prepared by W. H. Toepke, Call Building, San Francisco.

CONCRETE BREW HOUSE

A three-story reinforced concrete brew house will be built at Santa Rosa for Grace Brothers Brewing Co. L. H. Nishkian, Underwood Building, San Francisco, is the engineer.

COALINGA SCHOOL

W. D. Coates, Jr., Rowell Building, Fresno, has completed plans for a science building, swimming pool and locker room for the Coalinga High School District. W. Adrian, San Francisco, is the structural engineer. Improvements will cost $150,000.

ATHERTON RESIDENCE

A contract has been awarded for a two-story stucco residence at Atherton, San Mateo County, at a cost of $17,000. Leo Sharps, 1477 Burlingame Avenue, Burlingame, is the architect, and W. E. Tourtelotte is the owner.

TIBURON RESIDENCE

Charles E. J. Rogers, architect in the Phelan Building, San Francisco, has awarded contract for a $13,000 house at Tiburon for Vincent F. Clarke.

RAYMOND HOOD

Raymond Hood, internationally known architect, died August 14 at his home, Southfield Point, Stamford, Conn. He was 53 years old.

Mr. Hood played an important part in the development of the skyscraper.

In association with John Mead Howells, he designed and erected the Chicago Tribune Tower. He was the architect for the American Radiator Building in New York.

Hood was born in Pawtucket, R. I., March 29, 1881, and studied at Brown University. Later he attended the Ecole des Beaux Arts in Paris, France. He began the practice of architecture in New York City in 1903.

ADDRESSES TACOMA ARCHITECTS

Frederick Shaw, architect of San Francisco, formerly of Tacoma, on August 6 addressed the Tacoma Society of Architects on the peculiar conditions facing building designers in the Bay City, due to the new state earthquake law. Especially difficult, he said, was the problem of placing a satisfactory foundation for residences on the sand dunes.

Frederick Heath, senior member of Heath, Gove and Bell, on July 30, spoke on the proposed revival of the city planning project by the City Planning Board.

ARCHITECTS DESIGN SANCTUARY

Exhibition drawings for the proposed Sanctuary of Our Sorrowful, prepared from extensive studies made by the architectural firm of Heath, Gove and Bell of Tacoma, and to be erected on Rocky Butte, Sandy Boulevard, Portland, were shown at the first Marian Congress held August 12 to 15 in the Rose City. The Servite Order of the Roman Catholic Church intends to erect a monumental edifice in the near future on a 52-acre site on the eastern border of the Oregon metropolis. The location has a commanding view.

SEATTLE ARCHITECT A BENEDICT

Albert Ernest Hennessy, Seattle architect and recent graduate of the University of Washington, and Miss Mary Erckenbrach, mural artist of Seattle and former University student, were married July 21 at Mount Vernon, Washington. For several years past they have been partners in interior decorating.

SANTA MARIA COURTHOUSE

Santa Barbara county supervisors contemplate erecting a branch courthouse in Santa Maria to cost approximately $125,000. The project depends upon an appropriation of government funds.

SUPERVISING ARCHITECTS NAMED

The Board of Regents of the University of Washington at its meeting July 28, appointed the firm of Bebb and Gould, Seattle, supervising architects for all future construction on the University campus, and they will have final authority, under the board, to pass upon all plans and designs for construction. Messrs. Bebb and Gould were authorized to proceed to work out the general campus plan in detail within the limits of expenditure originally estimated for this purpose.

Upon recommendation of the building committee, the Board of Regents, Lewis B. Schwellenbach, presiding, authorized immediate retainers for the design of three new building projects, namely: David J. Myers and John Graham, both of Seattle, joint architects for the Women's Dormitory Building; A. H. Albertson, Seattle, architect for the Infirmary Building; George H. Kreuger, engineer, to design and build the addition to the Power House and its mechanical equipment.

CATHEDRAL ADDITION

Carlton M. Winslow, 1001 Architects' Building, has completed plans for a chapel building to be erected at St. Paul's Cathedral, Figueroa Street, between 6th and 7th streets, Los Angeles. The building will be of reinforced concrete construction, one and part two stories, 87x42 feet in area, tile roofing, wood roof trusses, steel sash, cement floors, leaded glass and stained glass windows, unit heating system, etc.

PHOTOGRAPHIC EXHIBIT

Southern California Chapter, American Institute of Architects, sponsored an exhibition of 135 photographs of the work of Mexican architects, held in conjunction with the regular monthly meeting at International Institute, 435 S. Boyle Ave., Los Angeles, September 11. The Mexican Consul, Senor Alejandro V. Martinez, and other prominent Mexicans were in attendance.

SANTA CLARA POST OFFICE

Bids are being received by the Treasury Department, Procurement Division, Public Works Branch, Washington, D. C., for the construction of a post office building in Santa Clara. Appropriation for the building is $40,500. Plans were prepared by Clarence R. Ward, 24 California Street, San Francisco.

TRACY POST OFFICE

Treasury Department, Washington, D. C., has selected property at the northwest corner of Tenth and B streets, Tracy, as the site for the United States post office to be erected in that city. The site covers an area of 85x163 feet.

PERSONALS

Fred G. Rounds, Washington's peripatetic architect whose recent activities have been centered in the W. R. Rust Building, Tacoma, has accepted an appointment in the office of the Supervising Architect, U. S. Treasury Department, Washington, D.C.

W. E. Schirmer, architect, has moved to Room 910 in the Bank of America Building, Oakland.

Claud B. Barton, formerly practicing architecture in Oakland, is now located in Los Angeles where he is supervising construction of a $25,000 home for Mrs. Bekins from plans by himself and his brother, Eugene Barton, of San Francisco. Claud Barton is becoming an ardent lawn bowler and he recently took part in the state tournament of the California Lawn Bowling Association, held on the Victory Park greens, near Pasadena.

Elmer Grey now has an office in the Architects' Building, Los Angeles, as well as an office in Pasadena.

VIOLATION OF CONTRACTORS ACT

Two San Jose contractors were convicted on charges of evasion of the state contractors' act and are at liberty on two years' probation and under order of the court to pay $1,800 to a San Jose building material dealer for supplies purchased in connection with a contract to plaster the new San Jose post office. They are Jesse Shay and S. M. Shimmon of San Francisco.

Both men pleaded guilty following their arrest on charges filed by Inspector James Fellom, San Jose, representing Carlos W. Huntington, registrar of contractors. Shay, according to evidence obtained by Registrar Huntington, obtained a $7,900 contract for plastering the new post office. Being unable to accept the contract himself, because of inability to obtain a state license, Shay was alleged to have assigned the contract to Shimmon, under a secret agreement whereby they were to equally share the profits.

BAYWOOD RESIDENCE

Chester H. Treichel, 696 Cleveland Avenue, Oakland, has completed plans for a $14,000 Spanish style dwelling to be built in the Baywood District of San Mateo for Howard L. Stillwell. House will have nine rooms, three baths, two-car garage and tile roof.

EUREKA MARKET

A one-story super market building has been planned for Eureka by F. T. Georgeson, architect of that city. Improvements will cost $25,000. Henry Calanchini of Ferndale, is the owner.

HISTORIC AMERICAN BUILDINGS SURVEY

[Concluded from Page 58]

Washington Street, Sugg House, House at Dodge and Stuart Streets, House near Veterans Building, Door in House at Dodge and Stuart Streets, St. James Episcopal Church.

(Near) Sonora, Tuolumne County.
Miscellaneous photos only: Dam, Lime Kilns.

Spadra, Los Angeles County.
La Casa de Recardo Vejar, 37-10, 3s, 2p.

Springfield, Tuolumne County.
Miscellaneous photos only: School, House.

Sweetland, Nevada County.
Miscellaneous photos only: Hotel and Store.

Tuttletown, Tuolumne County.
Miscellaneous photos only: Store.

(Near) Tuttletown, Tuolumne County.
Miscellaneous photos only: Farm House.

Volcano, Amador County.
Miscellaneous photos only: Hotel, Masonic Hall and Store, Store.

Weaverville, Trinity County.
Miscellaneous photos only: Main Street, Trinity County Court House, I.O.O.F. Building, Store, Old Brewery, Jumper House, Chinese Joss House, Old Fire Engine House.

Wesport, Mendocino County.
Miscellaneous photos only: General View.

Whittier, Los Angeles County.
Casa de Pio Pico (Hacienda Del Rancho Paso De Bartoloviejo) 37-24, 7s, 10p.

LOCAL HOUSING OFFICIALS

Practically every construction group in San Francisco has voiced approval of the Federal housing administration's plans to insure nearly $3,000,000,000 credit to home owners that they may immediately improve and repair their properties.

Clifford D. Anglin, district director of the Federal housing administration; Albert Swinerton, in charge of the work for the 11 Western States, and Mano Zan, chairman of the local construction division conference on the NRA building code, are the leading lights in the movement.

Every branch of the industry from engineering and architecture to contracting, including members of the Associated General Contractors, has shown great interest.

Besides the hundreds of builders and contractors affected by the release of the funds, more than 50,000 building trades workers in San Francisco will benefit, it was pointed out.

Chapter and Club Meetings

SOUTHERN CALIFORNIA CHAPTER

George B. Buckley, assistant manager of the Los Angeles Chamber of Commerce construction industries department, addressed the regular monthly meeting of Southern California Chapter, American Institute of Architects, at Taix restaurant in Los Angeles, August 14. Mr. Buckley called attention to what he termed a golden opportunity for the architects to consolidate the gains they have made in their efforts to place public works commissions in private hands.

Speaking on the subject of public works, Sumner Spaulding, who presided, stated the petition submitted to a gathering of Southern California architects June 19, wherein a method of selecting architects for government work was set forth, is now in the hands of authorities in Washington. Mr. Spaulding also spoke of the opportunities presented by the government housing program, and of architects who have been consulted by the administrator of this program.

Henry Carlton Newton, chairman of the engineering committee, made a report which revealed that considerable progress has been made in setting up a schedule of fees for engineers, the licensing of mechanical and electrical engineers, and the preparation of a booklet to publicize the architectural and engineering professions. The report was referred to the executive committee.

Reporting on unemployment, Henry F. Withey, chairman of that committee, said the historical monuments restoration program would probably be continued under SERA direction and would furnish about four months work for sixty draftsmen. It was pointed out that those eligible for this work must be on the county relief roll.

E. F. Bissantz, chairman of the exhibition committee, announced that at the September meeting of the Chapter an interchange exhibition of contemporary architecture of Mexico would be shown, including 135 photographs of recent work done in that country.

J. W. F. Binderheim read a paper on the subject, "What is an Architect?"

CERTIFICATES OF FELLOWSHIP

Presentation of three certificates of "Fellowship" awarded by the American Institute of Architects at the 1934 national convention last May, featured the initial fall dinner meeting of the Washington State Chapter September 6, in Seattle. The honored recipients were Carl F. Gould, A. H. Albertson and David J. Myers, all leaders in their profession in Seattle and the Pacific Northwest. The meeting heard progress reports on the building program of the National Housing Administration and the Reconditioning Division of the Home Owners Loan Corporation.

ENGINEERS MEETING

A special meeting of the San Francisco Section, American Society of Civil Engineers, was held at the Engineer's Club, 206 Sansome Street, San Francisco, Monday evening, July 23rd. This meeting was held in honor of Harrison P. Eddy, President, and George T. Seabury, Secretary, of the American Society of Civil Engineers, who were visiting San Francisco before returning to New York from the Vancouver convention. The eighty-five members and guests were also honored to have as a guest Professor A. N. Talbot, Past President of the American Society of Civil Engineers.

President Bowers called the meeting to order and introduced Secretary George T. Seabury, who stated that there have been many changes in society affairs in recent years, particularly with reference to the welfare of engineers.

The first change of importance was in 1930 when a committee of the society made an extensive study of engineering salaries. In this year engineering employment and salaries were at the high peak of all time. Also in this same year the president and secretary of the Society visited President Hoover in Washington, and urged him to develop a mapping and other programs that would provide work for unemployed engineers.

The society has been active in another type of welfare work, namely, the financial relief of fellow engineers during the depression. The New York Section alone has expended $110,000 for such work. A great many other Sections have done their share in assisting their fellow members.

Still another change in type of society affairs was evident when help was given in the development of Federal construction projects. A group of men of the American Society of Civil Engineers in New York City made and conceived the public works program. They developed the detail of this thought and, after the endorsement of the executive committee of the society, went to Wash-

ington and spent a great deal of time educating Congressmen to the value of such a program. As a result the RFC was organized. This group is still in existence and active. The RFC did not prove to be broad or flexible enough so the committee again went to Washington and once more was helpful in the development of the PWA program.

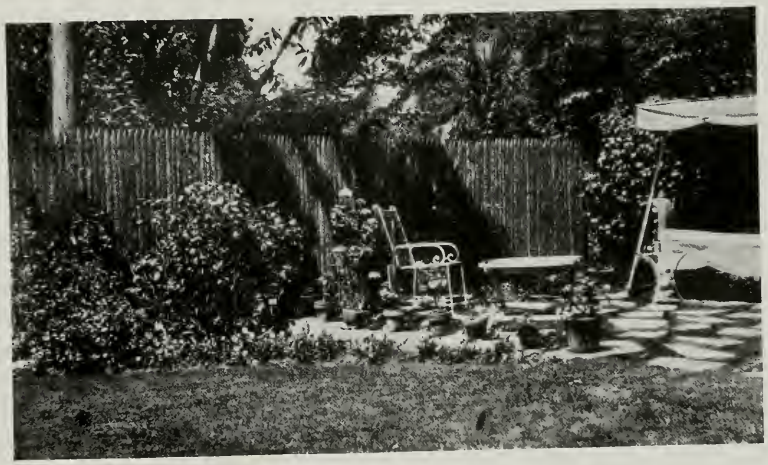
President Bowers then introduced President Harrison P. Eddy, who expressed appreciation of the opportunity of visiting the San Francisco Section, since in his opinion the real advantage to be derived from any society is chiefly the contact members have with each other. He spoke in general of the changes mentioned by Secretary Seabury and stated that one of the most important questions before the Board of Directors is whether they are now doing the proper thing in reference to welfare work. In the past the functions of the society have been 100 per cent technical. One important change from this type of activity took place with the registration of civil engineers, a phase of welfare work.

One of the most serious questions before the society officials is whether the society should strongly back the policy of seeking employment for engineers. President Eddy stated he would like the judgment and opinion of local engineers on this question and on the Engineer's Code. The formation of an Engineer's Code was started about a year ago and the society took the lead, as it was the only national engineering society that had a large percentage of its membership interested in the construction industry. Many points that seemed desirable for inclusion in this code had to be dropped because of government regulations. First salaries and then fees were to be included, but government officials would not permit either. There have been sixteen drafts of the code. President Eddy stated that the code has been forced on engineers due to the intrusion of industry into engineering and that if the principle of codes is going to last it would seem that engineers need one for self protection.

ADDITION TO MARKET

Alterations and additions are planned to a Salinas drive in market from plans by Charles E. Butner, architect of Salinas. Work will cost $20,000.

"CALFENS"



A beautiful and inexpensive garden screen.
An attractive background for flowers and foliage.
A durable fence of woven redwood pickets with bark, moss and lichens left intact.

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San Francisco's Splendid New City and County Jail designed by Albert Roller and Dodge A. Riedy will be featured in the October ARCHITECT AND ENGINEER

STATE HAS 22,430 CONTRACTORS

Indicating a heavy turnover in the personnel of the building and construction business a total of 46,493 persons or firms have held state contractors' licenses at one time or another in the five years since the enactment of the Contractors Act in 1929, Glen V. Slater, assistant state registrar of contractors of California, states in a report to Governor Merriam.

Of this number, it appears that only 22,430 contractors were able to weather the storms of economic adversity during the five years and remain in business, Mr. Slater reported.

The following is a tabulation of licenses issued in each fiscal year since enactment of the contractors' act in 1929:

Fiscal year	Renewals	New licenses	Total
1929-30	.....	21,624	21,624
1930-31	18,062	9,571	27,663
1931-32	18,722	6,328	25,050
1932-33	17,881	4,484	22,365
1933-34	17,944	4,486	22,430

Registration of contractors for the fiscal year ended June 30,1934, advanced to 22,430, an average of one contractor for each 253 persons in the state. This was a gain of 65 over the previous year.

Indications point to "an even greater increase during the ensuing fiscal year," the report said. Applications for 1934-35 licenses already filed have exceeded expectations.

With surprising consistency, applications of contractors who were either just entering the construction business or re-entering this field after a lapse of a year or more, flowed in at the rate of 15 per day throughout the year. A total of 5,568 new applications were filed during the year, in addition to the 16,862 filed before the 1933-34 renewal deadline.

Registration of contractors in the major cities of the State follows: Bakersfield 147, Berkeley

Boulder Canyon Dolomitic Hydrated Lime ●

Lewis P. Hobart
Architect
Dinwiddie Construction Co.
General Contractors
A. Knowles
Plastering Contractor

Used for Interior base coat and finish coat plastering in

New Bohemian Club Building
San Francisco

UNITED STATES LIME PRODUCTS CORP.
SAN FRANCISCO LOS ANGELES

Estimator's Guide

Giving Cost of Building Materials, Wage Scale, Etc.

Owing to the various crafts accepting the NRA code of fair competition, in some cases they have adopted a schedule of prices, and it therefore would be advisable to get in touch with these firms direct.
Amounts quoted are figuring prices and are made up from average quotations furnished by material houses to three leading contracting firms of San Francisco.

NOTE—Add 2½% Sale Tax on all materials but not labor.

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

Bond—1½% amount of contract.

Brickwork—
Common, $35 to $40 per 1000 laid, (according to class of work).
Face, $75 to $90 per 1000 laid, according to class of work).
Brick Steps, using pressed brick, $1.10 lin. ft.
Brick Walls, using pressed brick on edge, 60c sq. ft. (Foundations extra.)
Brick Veneer on frame buildings, $.75 sq. ft.
Common, f. o. b. cars, $15.00 job cartage.
Face, f.o.b. cars, $45.00 to $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f.o.b. job)

3x12x12 in.	$ 84.00 per M
4x12x12 in.	94.50 per M
6x12x12 in.	126..00 per M
8x12x12 in.	225.00 per M

HOLLOW BUILDING TILE (f.o.b. job) carload lots).

8x12x5½	$ 94.50
6x12x5 ½	73.50

Discount 5%.

Composition Floors — 18c to 35c per sq. ft. In large quantities, 16c per sq. ft. laid.
Mosaic Floors—80c per sq. ft.
Dnraflex Floor—23c to 30c sq. ft.
Rubber Tile—50c per sq. ft.
Terazzo Floors—45c to 60c per sq. ft.
Terazzo Steps—$1.60 lin. ft.

Concrete Work (material at San Francisco bunkers) — Quotations below 2000 lbs. to the ton. $2.00 delivered.

No. 3 rock, at bunkers	$1.65 per ton
No. 4 rock, at bunkers	1.65 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
Washed gravel, at bunkrs	1.75 per ton
Elliott top gravel, at bnkrs.	1.75 per ton
City gravel, at bunkers	1.40 per ton
River sand, at bunkers	1.50 per ton
Delivered bank sand	120 cu. yd.

Note—Above prices are subject to discount of 10c per ton on invoices paid on or before the 15th of month. following delivery.

SAND
Del Monte, $1.75 to $3.00 per ton.
Fan Shell Beach (car lots, f. o. b. Lake Majella), $2.75 to $4.00 per ton.
Cement, $2.25 per bbl. in paper sks.
Cement (f.o.b.) Job. S.F.) $2.90 per bbl.
Cement (f.o.b. Job, Oak.) $2.90 per bbl.
Rebate of 10 cents bbl. cash in 15 days.
Medusa "White" .....$ 8.50 per bbl.
Forms, Labors average 25.00 per M
Average cost of concrete in place, exclusive of forms, 30c per cu. ft.
4-inch concrete basement floor.....12½c to 14c per sq. ft.
4½ inch Concrete Basement floor .....14½c to 16c per sq. ft.
2-inch rat-proofing....6½c per sq. ft.
Concrete Steps ..... $1.25 per lin. ft.

Dampproofing and Waterproofing—
Two-coat work, 15c per yard.
Membrane waterproofing—4 layers of saturated felt, $4.00 per square.
Hot coating work, $1.80 per square.
Meduca Waterproofing, 15c per lb., San Francisco Warehouse.

Electric Wiring—$12.00 to $15.00 per outlet for conduit work (including switches).
Knob and tube average $7.00 per outlet, including switches.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in four-story building, $2800; direct automatic, about $2700.

Excavation—
Sand, 50 cents; clay or shale, 80c per yard.
Teams, $10.00 per day.
Trucks, $18 to $25 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $75.00 per balcony, average.

Glass (consult with manufacturers)—
Double strength window glass, 15c per square foot.
Quartz Lite, 50c per square foot.
Plate 75c per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 35c per sq. foot.
Obscure glass, 26c square foot.
Note—Add extra for setting.

Heating—
Average, $1.90 per sq. ft. of radiation, according to conditions.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.

Lumber (prices delivered to bldg. site)

No. 1 common	$35.00 per M
No. 2 common	28.00 per M
Selected O. P. common	37.50 per M
1x4 No. 3 form lumber	20.00 per M
1x4 No. 2 flooring VG	50.00 per M
1x4 No. 3 flooring VG	45.00 per M
1x6 No. 2 flooring VG	50.00 per M
1¼x4 and 6, No. 2 flooring	52.00 per M

Slash grain—

1x4 No. 2 flooring	$40.00 per M
1x4 No. 3 flooring	36.00 per M
No. 1 common run T. & G.	40.00 per M
Lath	5.60 per M

Shingles (add cartage to prices quoted)—

Redwood, No. 1	$ 1.00 per bdle.
Redwood, No. 2	.80 per bdle.
Red Cedar	.95 per bdle.

Hardwood Flooring (delivered to building)—

	13-16x2¼" T&G	8/8x2" T&G	5-16x2" Sq.Ed.
13-16x3¼" T & G Maple	$120.00 M ft.		
1 1-16x2¼" T & G Maple	132.00 M ft.		
⅞x3½ sq. edge Maple	140.00 M ft.		
Clr. Qtd. Oak	$200.00 M	$150.00 M	$180 M
Sel. Qtd. Oak	140.00 M	120.00 M	135 M
Clr. Pla. Oak	135.00 M	107.00 M	120 M
Sel. Pla. Oak	120.00 M	88.00 M	107 M
Clear Maple	140.00 M	100.00 M	
Laying & Finishing	13c ft.	11 ft.	10 ft.

Wage—Floor layers, $7.50 per day.

Building Paper—

1 ply per 1000 ft. roll	$3.50
2 ply per 1000 ft. roll	5.00
3 ply per 1000 ft. roll	6.25
Brownskin, 500 ft. roll	4.20
Pro-tect-o-mat, 1000 ft. roll	12.00
Sisalkraft, 500 ft. roll	5.00
Sash cord com. No. 7	$1.20 per 100 ft.
Sash cord com. No. 8	1.50 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.25 per 100 ft.

Sash weights cast iron, $50.00 ton
Nails, $3.50 base.
Sash weights, $45 per ton.

Millwork—
O. P. $100.00 per 1000. R. W., $106.00 per 1000 (delivered).
Double bung box window frames, average, with trim, $6.50 and up, each.
Doors, including trim (single panel. 1¾ in. Oregon pine) $8.00 and up, each.
Doors, including trim (five panel, 1¾ in. Oregon pine) $6.50 each.
Screen doors, $4.00 each.
Patent screen windows, 25c a sq. ft.
Cases for kitchen pantries seven ft. high, per lineal ft., $6.50 each.
Dining room cases, $7.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average), $12.00 per M.
For smaller work average, $27.50 to $35.00 per 1000.

Marble—(See Dealers)

Painting—
Two-coat work ..... 29c per yard
Three-coat work .....40c per yard
Cold Water Painting .....10c per yard
Whitewashing ..... 4c per yard
Turpentine, 80c per gal., in cans and 75c per gal. in drums.
Raw Linseed Oil—80c gal. in bbls.
Boiled Linseed Oil—85c gal. in bbls.
Medusa Portland Cement Paint, 20c per lb.

Carter or Dutch Boy White Lead in Oil (in steel kegs).

	Per Lb.
1 ton lots, 100 lbs. net weight	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Dutch Boy Dry Red Lead and Litharge (in steel kegs).

1 ton lots, 100 lb. kegs, net wt.	10¾c
500 lb. and less than 1 ton lots	11c
Less than 500 lb. lots	11½c

Red Lead in Oil (in steel kegs)

1 ton lots, 100 lb. keg s,net. wt.	12½c
500 lb. and less than 1 ton lots	12½c
Less than 500 lb. lots	13c

Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.00 lineal foot
8-inch	1.50 lineal foot
10-inch	1.75 lineal foot
12-inch	2.00 lineal foot

Plastering—Interior—

	Yard
1 coat, brown mortar only, wood lath	$0.60
2 coats, lime mortar hard finish, wood lath	.70
2 coats, hard wall plaster, wood lath	.80
3 coats, metal lath and plaster	1.25
Keene cement on metal lath	1.30
Ceilings with ¾ hot roll channels metal lath	.75
Ceilings with ¾ hot roll channels metal lath plastered	1.50
Shingle partition ¾ channel lath 1 side	.85
Single partition ¾ channel lath 2 sides 2 inches thick	2.75
4-inch double partition ¾ channel lath 2 sides	1.30
4-inch double partition ¾ channel lath 2 sides plastered	3.00

Plastering—Exterior—

	Yard
2 coats cement finish, brick or concrete wall	$1.10
2 coats Atlas cement, brick or concrete wall	1.35
3 coats cement finish No. 18 gauge wire mesh	1.50
3 coats Medusa finish No. 18 gauge wire mesh	2.00

Wood lath, $5.50 per 1000.
2.5-lb. metal lath (dipped) .17
2.6-lb. metal lath (galvanized) .20
3.4-lb. metal lath (dipped) .22
3.4-lb. metal lath (galvanized) .28
¾-inch hot roll channels, $72 per ton.
Finish plaster, $18.90 ton; in paper sacks, Dealer's commission, $1.00 off above quotations.
$13.85 (rebate 10c sack).
Lime, f.o.b. warehouse, $2.25bbl.; cars, $2.15
Lime, bulk (ton 2000 lbs.), $16.00 ton.
Wall Board 5 ply, $50.00 per M.
Hydrate Lime, $19.50 ton.
Plasterers Wage Scale .....$1.25 per hour
Lathers Wage Scale ..... 1.25 per hour
Hod Carriers Wage Scale ..... 1.10 per hour

Composition Stucco—$1.60 to $2.00 sq. yard (applied).

Plumbing—
From $65.00 per fixture up, according to grade, quantity and runs.

Roofing—
"Standard" tar and gravel, $6.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $6.50 per sq.
Tile, $20.00 to $35.00 per square.
Redwood Shingles, $11.00 per square in place.
Cedar Shingles, $10 sq. in place.
Recoat. with Gravel, $3.00 per sq.
Slate, from $25.00 to $60.00 per sq. laid, according to color and thickness.

Sheet Metal—
Windows—Metal, $2.00 a sq. foot.
Fire doors (average), including hardware, $2.00 per sq. ft.

Skylights—
Copper, 90c sq. ft. (not glazed).
Galvanized iron, 25c sq. ft. (not glazed).

Steel—Structural
$100 ton (erected), this quotation is an average for comparatively small quantities. Light truss work higher. Plain beams and column work in large quantities $80 to $90 per ton cost of steel; average building, $89.00.

Steel Reinforcing—
$85.00 per ton, set, (average).

Stone—
Granite, average, $6.50 cu. foot in place.
Sandstone, average Blue, $4.00, Boise, $3.00 sq. ft. in place.
Indiana Limestone, $2.80 per sq. ft. in place.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 75c per lineal foot.
Note—Consult with agents.

Tile — Floor, Wainscot, Etc. — (See Dealers).

SAN FRANCISCO BUILDING TRADES WAGE SCALE FOR 1933

Established by The Impartial Wage Board November 9, 1932. Effective on all work January 1, 1933, to remain in effect until June 30, 1933, and for so long thereafter as economic conditions remain substantially unchanged.

This scale is based on an eight-hour day and is to be considered as a minimum and employees of superior skill and craft knowledge may be paid in excess of the amounts set forth herein.

CRAFT	Journeyman Mechanics
Asbestor Workers	$6.40
Bricklayers	9.00
Bricklayers' Hodcarriers	5.60
Cabinet Workers (Outside)	7.20*
Caisson Workers (Open) Water Work	8.00
Carpenters	7.20*
Cement Finishers	7.20
Cork Insulation Workers	7.20
Electrical Workers	8.00
Electrical Fixture Hangers	7.00
Elevator Constructors	8.68
Elevator Constructors' Helpers	6.08
Engineers, Portable and Hoisting	8.00
Glass Workers (All Classifications)	6.80
Hardwood Floormen	7.20*
Housemovers	6.40
Housesmiths, Architectural Iron (Outside)	7.20
Housesmiths, Reinforced Concrete, or Rodmen	7.20

*Established by Special Board

CRAFT	Journeyman Mechanics
Iron Workers (Bridge and Structural)	9.60
Iron Workers (Hoisting Engineers)	10.00
Laborers (6-day week)	5.00
Lathers, Channel Iron	8.00
Lathers, All Other	6.80
Marble Setters	8.00
Marble Setters' Helpers	5.00
Millwrights	7.20*
Mosaic and Terrazzo Workers (Outside)	7.20
Mosaic and Terrazzo Helpers	5.00
Painters	7.00
Painters, Varnishers and Polishers (Outside)	7.00
Pile Drivers and Wharf Builders	$ 8.00
Pile Drivers Engineers	9.00
Plasters and Hodcarriers (See wage scale under Plastering).	
Plumbers	8.00
Roofers (All classifications)	6.40
Sheet Metal Workers	7.20
Sprinkler Fitters	9.00
Steam Fitters	8.00

CRAFT	Journeyman Mechanics
Stair Builders	7.20*
Stone Cutters, Soft and Granite	6.80
Stone Setters, Soft and Granite	8.00
Stone Derrickmen	7.20
Tile Setters	8.00
Tile Setters' Helpers	5.00
Tile, Cork and Rubber	7.20
Welders, Structural Steel Frame on Buildings	9.60
Welders, All Others on Buildings	8.00
Auto Truck Drivers—Less than 2,500 lbs.	5.50
Auto Truck Drivers—2,500 lbs. to 4,500 lbs.	6.00
Auto Truck Drivers—4,500 lbs. to 6,500 lbs.	6.50
Auto Truck Drivers—6,500 lbs. and over	7.00
General Teamsters, 1 Horse	5.50
General Teamsters, 2 Horses	6.00
General Teamsters, 4 Horses	6.50
Plow Teamsters, 4 Horses	6.50
Scraper Teamsters, 2 Horses	6.00
Scraper Teamsters, 4 Horses	6.00

GENERAL WORKING CONDITIONS

1. Eight hours shall constitute a day's work for all crafts, except as otherwise noted.
2. Where less than eight hours are worked pro rata rates for such shorter period shall be paid.
3. Plasterers' Hodcarriers, Bricklayers' Hodcarriers, Roofers' Laborers and Engineers, Portable and Hoisting, shall start 15 minutes before other workmen, both at morning and at noon.
4. Five days, consisting of not more than eight hours a day, on Monday to Friday inclusive, shall constitute a week's work.
5. The wages set forth herein shall be considered as net wages.
6. Except as noted the above rates of pay apply only to work performed at the job site.
7. Transportation costs in excess of twenty-five cents each way shall be paid by the contractor.
8. Traveling time in excess of one and one-half hours each way shall be paid for at straight time rates.
9. Overtime shall be paid as follows: For the first four hours after the first eight hours, time and one-half. All time thereafter shall be paid double time. Saturdays (except Laborers), Sundays and Holidays from 12 midnight of the preceding day, shall be paid double time. Irrespective of starting time, overtime for Cement Finishers shall not commence until after eight hours of work.
10. On Saturday Laborers shall be paid straight time for an eight-hour day.
11. Where two shifts are worked in any twenty-four hours, shift time shall be straight time. Where three shifts are worked, eight hours' pay shall be paid for seven hours on the second and third shifts.
12. All work, except as noted in paragraph 13, shall be performed between the hours of 8 A. M. and 5 P. M.
13. In emergencies, or where premises cannot be vacated until the close of business, men reporting for work shall work at straight time. Any work performed on such jobs after midnight shall be paid time and one-half up to four hours of overtime and double time thereafter (provided, that if a new crew is employed on Saturdays, Sundays or Holidays which has not worked during the five preceding working days, such crew shall be paid time and one-half. No job can be considered as an emergency job until it has been registered with the Industrial Association and a determination has been made that the job falls within the terms of this section).
14. Recognized holidays to be: New Year's Day, Decoration Day, Fourth of July, Labor Day, Admission Day, Thanksgiving Day, Christmas Day.
15. Men ordered to report for work, for whom no employment is provided shall be entitled to two hours' pay.
16. This award shall be effective in the City and County of San Francisco.

NOTE: Provision of paragraph 13 appearing in brackets ( ) does not apply to Carpenters, Cabinet Workers (Outside), Hardwood Floormen, Millwrights, or Stair Builders.

385, Beverly Hills 131, Chico 60, Fresno 287, Glendale 307, Hollywood 134, Long Beach 883, Los Angeles City 5025, Modesto 126, Oakland 1049, Pasadena 565, Palo Alto 149, Pomona 88, Redwood City 100, Riverside 131, Sacramento 465, San Bernardino 109, San Diego 777, San Francisco 2502, San Jose 436, San Mateo 102, San Pedro 92, Stockton 206, and Vallejo 100.

In the enforcement division, considerable activity was registered during the past month, with a total of 75 formal complaint cases being submitted to the Registrar for adjudication and final settlement. These cases involved a total of $104,986 in building construction projects.

On these complaint cases, 29 hearings were conducted during the month, resulting in the revocation of the licenses of three contractors who were found guilty of operating in an illegal or unethical manner, in violation of State law. In addition, the licenses of 12 contractors were suspended.

Licenses were denied two applicants because of their inability to prove good reputation and character at formal hearings. Three other contractors won their license appeal at formal hearings, however. Three contractors, whose licenses had been previously suspended, were reinstated.

A total of 33 cases, involving contractors found operating without registering, were pending in the lower courts during the month, resulting in convictions being obtained in 16 cases, while two cases were dismissed.

With the record number of applications for license renewals, the 1934-35 register of licensed California contractors has just been published, with the names, license numbers, addresses and personnel of all licentiates. The compilation is being offered for sale at $3.50 per copy in order to defray cost of publication.

BUILDERS HOLD CONVENTION

The eighth annual convention of the California State Builders' Exchange was held at Long Beach August 31 and September 1. Sessions were held morning and afternoon each day, starting at 10 a. m. Friday, with a construction industry banquet Saturday evening as the final event on the program.

State President P. M. Sanford of Richmond presided. The following subjects were discussed:

"Code Coordination," A. S. Grant, National Code Coordinating Committee.

"Enforcement of State Compensation' Act," Wm. A. Wilson, C.E., State Department Industrial Relations.

"National Housing Act," Fred W. Marlow, Federal District Director.

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"State Contractors License Law Amendments." L. F. Danforth, State Contractors License Bureau.

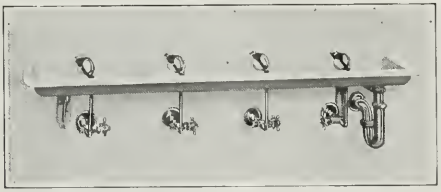
Friday evening an open meeting was held, at which the Builders Exchange legislative representatives were present. Discussions were led by W. H. George of San Francisco and Ralph Homann of Los Angeles.

Colonel Carlos W. Huntington, director of the State Department of Professional and Vocational Standards, officiated as toastmaster at the banquet Saturday evening in the Masonic Temple. Acting Governor Frank B. Merriam was the guest of honor and speaker of the evening. Addresses were also made by Earl Lee Kelly, state director of public works, and Captain Robert Henderson, president of the Long Beach Chamber of Commerce.

DR. FOSTER TO SPEAK

Sponsored by the Producers' Council Club of Northern California, a joint luncheon meeting of architects, engineers and members of the Producers' Council Club will be held at the Commercial Club on Monday September 24th, at 12:15 o'clock.

The speaker will be Dr. H. Foster Bain, Managing Director of the Copper and Brass Research Association, who is coming from New York to attend the American Mining Congress, Western



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Division meeting here. A great deal of the research and promotional work of the association, which is supported by the major copper companies, has to do with the building industry. Dr. Bain will tell of some very recent developments in the application of copper and copper alloys in building, and other things of interest to architects and engineers. He is also familiar with the economic and political situation as it affects the building industry, and coming, as he does, fresh from the East, is likely to have some very interesting things to say.

Dr. Bain was one of the founders of the Engineers' Club of San Francisco.

PROMOTED

C. E. Helms, first vice president of the Chas. McCormick Company, has announced the appointment of C. M. Freeland as assistant general sales manager of the company, with headquarters in San Francisco.

W. B. Wickersham succeeds Mr. Freeland as district sales manager in Los Angeles.

Both officials have been associated with the Chas. R. McCormick Lumber Company for a good many years.

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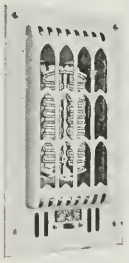

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The dehumidification of air which this principle involves has been practically and satisfactorily solved in many fields by the application of the "dehydrating" quality of Silica Gel. Over a period of years, Silica Gel equipment has been developed and successfully operated on a wide range of industries where it was necessary to reduce the

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B. Reed Hardman, architect of Berkeley, has completed plans for a $10,000 house for B. N. Coates and to be built on Cragmont Avenue, that city.

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ENGINEERING IN RUSSIA

"Some Historical Aspects of Industrial Development and Engineering in Russia," was the subject of an interesting talk by Dr. Boris A. Bakhmeteff at a recent meeting of the San Francisco Section, American Society of Civil Engineers.

The speaker said it is a difficult matter to give a clear, impartial report on conditions in Russia because of so many conflicting stories. Even the man who visits Russia finds it a task to properly register the living facts which he observes, unless he possesses a thorough understanding and knowledge of the history and economic conditions of the country.

Dr. Bakhmeteff was born in the Caucasian country in 1880 and became an engineer in one of Russia's most interesting periods, when the autocratic government was in ascendency and distinctly not acting for the good of Russian peasants. At that time this great people of a hundred millions was seeking relief from the depressing conditions of misgovernment. From 1861 to the end of the world war there was an enormous dynamic development in Russia, this particularly being true after the Japanese war in 1905. After the formation of the Duma in 1907 the political development was of such a character that in the early part of 1914 the rights of the laboring class were recognized to such an extent that labor representatives on the Duma enjoyed "free speech."

The thirty-year period preceding the world war was one marked by great engineering development, particularly from 1905 to 1913. Large water power, irrigation, railroad and industrial developments were planned and construction started. Dr. Bakhmeteff was then chief engineer of a large irrigation project and had outlined a scheme for connecting all the rivers of Russia into on interconnected water way so that barges and

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ships would be able to go most anywhere in the country. Dr. Bakhmeteff has come to the definite conclusion that if the minds of those persons in control of governmental affairs were developed in the same manner as are the minds of engineers, then many of the world's worst problems could be readily solved.

Russia is 85% agricultural. Dr. Bakhmeteff explained the development of agriculture in Russia and stated that in 1901 when visiting an agricultural center he found labor was very cheap and that all farm work was done with hand tools. Many years later when visiting the same region he found that these hand tools had been supplanted by machines; not machines of the quality used in America but machines built by village smithies. Howveer, they were several times more efficient than the hand tools. During a seven-year transition stage from hand tools to these crude machines, the value of agriculture developed in excess of 530%. Labor increased, thus improving the purchasing power which constitutes the background of the present development.

No country in the world paid a greater price for the world war than did Russia. The war broke down the splendid development that was started with the Duma, and then followed the revolution and socialistic regime. Revolutions, Dr. Bakhmeteff stated, are the greatest curse of humanity as they p r o d u c e extremely dangerous states of mind. He then spoke on the question of governments controlling industries and utilities as opposed to private ownership. The cost of production in Russia is very much higher under government ownership than it was under private ownership, being now four to five times what it was during the period of the Duma. The present great problem of the world is the competition of individualistic and governmental control of economic conditions. This problem should be studied by men of engi-

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neering training and efficiency and Dr. Bahkmeteff believes that the findings of such a study would show that efficiency and quality would be incomparably lower under governmental control than it would be under individualistic production.

During the reign of the Duma the Russian people were feeling more and more that they were gaining control of their own happiness. A system of socialism kills the most precious legacy a people has, that of liberty and freedom and it has been developing in Russia for more than twenty centuries.

"CREATIVE DESIGN"

The first issue of a quarterly periodical, *Creative Design*, is announced by the magazine *Arts and Decoration*.

The new publication is directed to the decorating and home furnishing trade, and deals only with new and outstanding developments in modern design, leaving merchandising and trade news to the journals of the individual industries. China and glass, linen, silver, furniture, floor coverings, blankets and bedding, wall coverings, lighting fixtures and decorative accessories are all covered in the editorial pages.

BARGAIN HOMES

If present plans to stimulate construction mature, a typical home that would have cost $9,500 in 1929 will cost less than $7,000 in 1934, according to the *American Builder*. Financing charges will be 18 to 25 per cent less. Real estate costs will be lower, by as much as 50 per cent in some cases. And more efficient equipment and better planning will also produce substantial dividends for the home-builder.

During the depression construction has stood still—but architects and designers have not. The five-room home of today has the same efficiency as the six-room home of a few years back, due to better

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arrangement. New methods have been evolved, new ideas created. That means that the homebuilder gets a better break than he ever got before.

There isn't an industry that wouldn't benefit from stimulated domestic construction. Insurance, steel, electric, railroad, lumber, paint, cement—every time a home is built money is released that goes into their coffers and thence to the pockets of workers. It is reliably estimated that a potential $1,500,000,000 of capital exists that could, under favorable circumstances, be turned into the channels of home construction. If that is done, employment and hard times generally will take a serious set-back. — *Michigan Society of Architects Weekly Bulletin.*

BUILDING IMPROVES

Building permits on the Pacific Coast during August registered a large increase over July and were closely comparable to those of August, 1933, according to the Monthly Building Survey by H. R. Baker & Co. Permits during August in the twenty-five cities reporting largest volume amounted to $4,560,051 compared with $3,559,894, or a gain of more than One Million Dollars over the preceding month. Permits during August, 1933, amounted to $4,929,459.

The volume for seventy-six cities reporting in August 1934 was $5,160,880 contrasted with $5,848,878 in August 1933. Los Angeles again ranked first among the twenty-five leading cities and was followed by Stockton, whose total of $661,520 exceeded San Francisco by more than $50,000. Sacramento ranked fourth and was followed by Oakland, Portland, Vancouver, B.C., Seattle, Beverly Hills and Long Beach.

Eight cities were added to the twenty-five reporting largest volume of building permits in August. These included San Jose, Torrance, Colton, San Mateo, Inglewood, Salt Lake City, Mo-

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desto and Burbank. Cities reporting an increase in August over July and August, 1933, included Stockton, San Francisco, Sacramento, Vancouver, B.C., San Jose, Torrance, Alameda, Colton, Spokane, San Mateo, Inglewood, Modesto and Burbank. Those reporting increases in August over July alone were Portland, Seattle, Glendale, Berkeley, Salt Lake City. Tucson reported an increase in August over August, 1933, but not over July of this year.

BAR WINNERS

The winners of $5,000 in cash prizes in a nation-wide competition for new ideas for bar designs were announced by the jury of awards on July 17th.

The prizes were given by Robert F. Bensinger, president of Brunswick-Balke-Collender Company, Chicago, for the best designs for three types of bars. A total of 117 cash awards were made to architects and designers in all parts of the country. The jury was composed of Harvey Wiley Corbett and Ralph Walker, New York architects; Benjamin Marshall and John A. Holabird, Chicago architects; Ernest Byfield of the Hotel Sherman and Karl Eitel of the Bismarck Hotel; and Mr. Bensinger. Angelo R. Clas was professional adviser.

Designs were sought for a de luxe bar, a commercial bar and a service bar. Maxfield E. Gluckman, of New York, took three prizes totaling $600. He won the first prize of $500 for the de luxe bar, the third prize of $75 for the service bar, and an honorable mention award of $25 for the commercial bar.

M. Righton Swicegood, of New York, won the second major portion of the awards. He took first prize of $500 for the commercial bar, an honorable mention award of $25 for the de luxe bar, and an honorable mention of $25 for the service bar.

Donald M. Douglas, of Georgetown, Connecticut, won the first prize of $350 for the service bar.

Lyle Reynolds Wheeler, of Los Angeles, won a total of $450 in prizes.

Color, chromium and mirrors worked in modernistic design played an important role in many of the designs. The first prize winner for the de luxe bar called for a circular bar with a glass fountain in the center illuminated from within. The bar itself is of ebonized wood with a stainless steel rail and the face of the bar is illuminated from the top edge. The center bar is illuminated by neon tubes.

TILE COMPETITION

The competition for a design of "A Post Office Lobby," recently held by the quarry tile industry under the professional advisorship of Carl P. Dumbolton, was judged in Washington, D.C., with the following awards:—First prize — Vernon F. Duckett and Henry S. See, Washington, D.C.; Second prize—S. Thomas Stathes, Washington, D. C., Third prize — Harry Francis Cunningham, Washington, D. C.; Honorable Mention — H. L. Virnelson, Washington, D. C., Edmund W. Malczewski and Dan W. Twiddy, Washington, D. C., Vernon F. Duckett and Henry S. See, Washington, D. C.; Mention — L. C. Page, Jr., Austin, Texas, Oran Jenkins, Stinson Beach, Marin County, California.

NRA

Direct effects of NRA codes in stabilizing business, preventing destructive price-cutting, increasing employment and purchasing power and raising prices from loss to profit levels are demonstrated by the following recovery trends:

There were 40,180,000 persons employed in the United States in June, 1934. This is a gain of 4,120,000 over the low point of March, 1933, and an increase of 2,320,000 over June, 1933, when NRA became operative. Most of this rise occurred in industries codified under NRA.

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Oakland
POST OFFICE BUILDING
Marysville

Contracts Under Construction

TWO WAREHOUSES
Fort Mason
THREE BARRACKS BUILDINGS
Hamilton Field
ORDNANCE WAREHOUSE
Hamilton Field
U. S. MACHINE AND ELECTRIC SHOP
Bremerton, Washington
TERMINAL "E" BUILDING
Oakland
MONTGOMERY-WARD BUILDINGS
Eureka and San Jose

MacDonald & Kahn

General Contractors

Financial Center Bldg.
405 Montgomery St.
San Francisco

Anderson & Ringrose

General Contractors

320 Market Street, San Francisco
Phone DO uglas 1373